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SARCOMA AND ENDOTHELIOMA: FREQUENTLY INCORRECT DIAGNOSES.

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Introduction.

AT the Austin Hospital during the period 1929 to 1931, twenty autopsies were performed on patients who had been admitted with diagnoses of "sarcoma" or "endothelioma". *Post mortem* study confirmed the clinical diagnosis in nine of the twenty cases, but showed it to be erroneous in the remaining eleven cases. In six of these the incorrect *ante mortem* diagnosis had been made on clinical and radiological evidence only; but in five cases (details of which are given in Table I) the erroneous diagnosis had been made histologically from biopsy specimens of the tumours.

Of the twenty patients under discussion, eight were admitted under the diagnosis of "bone sarcoma", this diagnosis being made in each instance on clinical and skiagraphic grounds and without biopsy specimens. *Post mortem* examination confirmed the diagnosis in five cases, but showed it to be incorrect in three cases, as follows: (i) A tumour thought to be a sarcoma of the femur proved to be a sacral chordoma with calcified extensions in the buttock and thigh; (ii) a tumour regarded as being a primary sarcoma of the ileum proved to be a metastasis from an unsuspected carcinoma of the kidney; (iii) a tumour, causing spontaneous fracture of the neck of the femur and diagnosed as osteogenic sarcoma, wa found to be a papillary adeno-carcinomatous metastasis from a latent primary growth in the thyreoid. I have recorded two of these three cases elsewhere.[13][15]

All of the foregoing observations concern only patients adequately investigated by competent workers; errors of diagnosis clearly due to incomplete or careless clinical study have not been

TABLE I.

Details of Five Cases Diagnosed Incorrectly from Histological Study of Biopsy Specimens.

No.	Histological Diagnosis of Biopsy Specimen.	Origin of Biopsy Specimen.	Final *Post Mortem* Diagnosis.
I	Lympho-sarcoma of cervical lymph glands.	Piece of an enlarged gland.	Pharyngeal carcinoma with cervical gland metastases.
II	Endothelioma of cervical lymph glands.	Surgically excised masses from neck.	Lingual and pharyngeal carcinoma with cervical gland metastases.
III	Sarcoma of tonsil.	Piece of ulcerated tumour of tonsil.	Carcinoma of kidney with widespread metastases, including tonsil.
IV	Endothelioma of pleura.	Tissue from empyema sinus.	Carcinoma of lung with pleural carcinosis.
V	Myxosarcoma of peritoneum.	Nodules removed at laparotomy.	Ovarian carcinoma with peritoneal carcinosis.

NOTE: Numbers I, II and III have been reported in detail elsewhere.[15]

included. All five patients of Table I, and the three patients with tumours erroneously diagnosed as bone sarcomata, came to the Austin Hospital from other major metropolitan hospitals where they had been carefully investigated, and most of them were subsequently under observation for long periods at the Austin Hospital. Clearly, then, even in the hands of competent investigators, the clinical, skiagraphic and biopsy histological diagnosis of "sarcoma" or of "endothelioma" is erroneous in an important proportion of cases. A discussion of the clinical and radiographic errors is not in my province; I am concerned only with the sources of error in the microscopical identification of biopsy specimens of tissue. Unfortunately, the tumours referred to in Table I cannot be employed as a basis for this inquiry, since in most instances the original biopsy material is not available. Instead, I propose to illustrate the errors possible in specimens selected from my own collection of surgical and *post mortem* material. Before I do this, some preliminary remarks on the definition and histological characters of sarcomata and endotheliomata are necessary.

Definition and Identification of Sarcomata.

A sarcoma is best defined as a malignant tumour arising from any non-epithelial mesodermal tissue. This embraces growths arising from fibrous, mucoid, osseous, cartilaginous, fatty, lymphoid, vascular, smooth muscular and striated muscular tissues; and the simplest nomenclature specifies each of these forms of sarcoma by an appropriate prefix; thus: fibro-, myxo-, osteo-, chondro-, lipo-, lympho-, angio-, leiomyo-, and rhabdomyo-sarcoma, respectively. Tumours of serosal and of lymph-vascular endothelium also fall within the scope of the definition, and endothelioma is best regarded as a subgroup of sarcoma. The inclusion of all these diverse forms of growth under the one generic name "sarcoma" is justified, not only by their common embryogenetic origin from non-epithelial mesoderm, but also by their general similarity of behaviour. The definition properly excludes two special forms of malignant non-epithelial tumour, namely, glioma and chordoma, the one of ectodermal and the other of entodermal origin. This exclusion is justified, not only by the special origins of these two neoplasms, but also by their behaviour, which in both cases differs decidedly from that of the group of sarcomata.

Neoplasms are recognized histologically by their tendency to differentiate, more or less imperfectly, into their respective tissues of origin. Thus epidermoid carcinoma, adeno-carcinoma and chorionic carcinoma are identified because they reproduce to a recognizable degree the structures of the corresponding normal tissues. Even in those carcinomata which differentiate in no special direction, and which, therefore, we designate *carcinoma simplex*, the clumping of the tumour cells in nests or alveoli within a connective tissue stroma is itself a form of differentiation betraying at least an epithelial origin. If, however, as frequently happens, a rapidly proliferating or anaplastic carcinoma should exhibit no distinct clumping of the cells within the stroma, the cells having lost all polarity and their arrangement being utterly disorderly and diffuse, then it may be difficult or impossible to affirm the epithelial nature of the tumour. In the same way, the origin of a sarcoma can be affirmed only when it displays a recognizable degree of differentiation towards one or other of the normal non-epithelial mesodermal tissues. Thus a tumour consisting of tissue which exhibits an identifiable tendency to ossify, is an osteo-sarcoma; one whose cells are clearly neoplastic representatives of smooth muscle fibres, is a leiomyosarcoma, and so on. Now, an anaplastic sarcoma of any origin, like an anaplastic carcinoma, may be richly and diffusely cellular and devoid of any histologically recognizable differentiation in the direction of any normal tissue; and the histogenesis of the tumour cannot then be decided. Evidently then, disorderly or diffuse architecture, with loss of all visible cell polarity, renders conclusive microscopical identification of a neoplasm impossible. Such a growth may be a sarcoma; it may equally well be, and indeed more often is, an anaplastic carcinoma.

These considerations, though almost axiomatic, are constantly being ignored in medical and pathological literature. Neoplasms are dubbed "round-celled" or "spindle-celled" or "mixed-celled" or "giant-celled" sarcomata, merely because they are diffusely cellular and possess scanty stroma and thin-walled vascular channels. The frequent presence of these nondescript features in anaplastic carcinomata is disregarded. Some writers go even further in their rigid preconceptions of a specific "sarcomatous" structure, and, recognizing epithelial alveolation amidst more diffuse tumour tissue, call neoplasms "alveolar sarcoma", "carcino-sarcoma", or *"sarcoma carcinomatoides"*. Such terms are confusing and valueless. It is safe to assert that "alveolar sarcoma" probably does not exist; dis-

tinct alveolation of tumour cells within a stroma denotes an epithelial growth. "Carcino-sarcoma", that is, a carcinoma with a sarcomatous stroma, a combination alleged to occur in animal neoplasms, is a highly dubious entity in human oncology. Certainly most, and probably all, growths claimed as such are merely instances of the versatile structure of anaplastic carcinomata.

Excluding tumours sufficiently differentiated to permit confident histological identification, there is no type of structure alleged to be characteristic of any form of sarcoma or endothelioma which may not be perfectly imitated by areas of atypical carcinoma. Moreover, the misleading appearances may involve extensive areas of a tumour and its metastases, and inklings of its carcinomatous nature may be revealed only by careful purposive search of many sections. Indeed, even after exhaustive *post mortem* study of a tumour and of all metastases, the origin and nature of the neoplasm in some cases remain obscure. Clearly, then, fragmentary biopsy specimens from such tumours may lead to very erroneous conclusions. The following reports exemplify the versatility of carcinomata in mimicking the structure of various types of sarcoma.

Reports of Cases.

CASE I.—E. H., a woman, aged forty-eight years, attended a public hospital in 1926 and hysterectomy was performed on account of a uterine growth. No report of the nature of this tumour exists, but it is recorded as projecting in polypoid form from the dilated cervix. Thereafter she remained well until July, 1930, when dysuria appeared. On admission to the Alfred Hospital in November, 1930, widespread neoplastic infiltration of the pelvic tissues and a vesico-vaginal fistula were present. A month later autopsy revealed extensive tumour invasion of the bladder wall and of the lateral pelvic and pre-sacral tissues, and scattered small metastases in both lungs. Histologically, the bulk of the pelvic neoplasm consisted of dense spindle-celled tissue closely resembling fibro-sarcoma (Figure I), but occasional areas exhibited undoubted carcinomatous clumping with a tendency to acinus formation. The pulmonary metastases showed no features whatever betraying their epithelial character. They consisted largely of diffuse spindle-celled tissue, often intimately associated with thin-walled blood vessels (Figure II); while in one area many giant cells were mingled with the spindle cells, simulating the structure of giant-celled sarcoma (Figure III).

Here, then, is an undoubted carcinoma of the uterus, in the recurrence of which there is such intimate mingling of the spindle-shaped tumour cells with their fibrous stroma that most of the growth mimics fibro-sarcoma, while in some parts of the pulmonary metastases giant-celled sarcoma is imitated. The tendency of uterine adeno-carcinoma to assume atypical architecture following curettage or incomplete removal is well recognized. Ewing[3] comments upon it, and I have illustrated it also in a previous paper.[16]

CASE II.—W.E., a man, aged sixty years, known clinically to suffer from a renal neoplasm, was found at autopsy to have a large carcinoma of the right kidney with invasion of the main renal vein and a few small metastases in the lungs. The primary growth was an irregularly lobulated mass, parts of which were orange-yellow in colour, and other parts pearly white. Microscopically the yellow parts exhibited the usual structure of clear-celled papillary adeno-carcinoma of the kidney, the so-called Grawitz tumour (Figure IV). The white areas, however, presented a totally different appearance, consisting of irregularly interlacing bundles of spindle cells very reminiscent of leiomyo-sarcoma (Figure V). The suspicion that possibly the neoplasm was really a dual or mixed one, containing two distinct tissue elements, was dispelled when it was found that transition forms between the two cell types were present. The pulmonary metastases displayed the intermediate structure more clearly than did the primary growth.

Carcinoma of the kidney displays a much more labile structure than is suggested by most text book descriptions. Areas of opaque or granular cells are frequently to be seen in predominantly clear-celled tumours; these areas may lose their characteristic papillary adeno-carcinomatous structure and display a disorderly or diffuse arrangement of the cells; spindle cells and giant cells may predominate; and perithelial arrangement may become conspicuous. These characters frequently appear not only in the primary growth, but also in metastases in lungs, brain, bones or elsewhere. In my collection I have many examples of this structural versatility of renal carcinoma, and I strongly suspect that many of the reported instances of "sarcomata" and "hypernephroid mixed tumours" of the adult kidney are merely examples of this versatility.

CASE III.—A.D., a woman, aged seventy-four years, suffered from *carcinoma simplex* of the left breast, with metastases in the adrenals, small intestine, perirenal tissues, and various lymph glands. A full report has been published elsewhere.[17] Interesting in the present connexion is the histological picture presented by the pedunculated secondary nodules in the bowel. This imitates perfectly the structure of perithelial angio-sarcoma as described and depicted by various writers.

Thin-walled vascular channels are surrounded by loosely textured mantles of tumour cells which convey a false appearance of proliferating from the vessel walls (Figure VI).

The structure exhibited in the present instance was due probably to two factors: (i) Vascular congestion due to pedunculation of the tumours, and (ii) inflammatory proliferation of vessels due to denudation and infection of the growths. I have observed a similar structure in an area of perineal ulceration of a rectal carcinoma, in which there was evident commingling of tumour tissue and granulation tissue on the ulcerated surface. Congestive and inflammatory vascular changes are then the principal factors in producing a spurious angio-sarcomatous appearance in carcinomatous tissue. Nevertheless, I have seen similar pictures in non-infected, non-ulcerated metastatic tumours in the lungs, brain and elsewhere. I do not conclude from these observations that perithelioma and angio-sarcoma do not exist, but that structures alleged to be characteristic of these neoplasms may readily be imitated by carcinoma, hence that the utmost scepticism is justifiable when such diagnoses are made from biopsy material or from incompletely investigated autopsy material.

CASE IV.—Case IV, recorded in detail elsewhere,[18] was one of anaplastic carcinoma of the breast with extensive metastases in many organs. Very real difficulty was experienced, both clinically and pathologically, in determining the origin and nature of the tumour. The great bulk of primary and secondary growths exhibited a diffuse spindle-celled structure, depicted in Figure VII. This pre-

dominant structure and the total absence of any lymph-glandular metastases strongly suggested that the tumour was a sarcoma. With Van Gieson's method, however, the tumour cells stained yellow in distinction from the scanty red-stained stroma; and in certain areas of the growths, especially the cerebral metastases (Figure VIII), the structure was that of unmistakable spheroidal-celled *carcinoma simplex*.

Here, then, is an undoubted mammary carcinoma, in which, however, the bulk of the primary growth and of many widespread metastases imitates the morphology of "spindle-celled sarcoma". Biopsy specimens in such a case would afford but little help in determining the nature of the growth. I am satisfied that most of the alleged instances of "sarcoma" of the breast recorded in surgical literature are examples of anaplastic carcinoma similar to that just described.

CASE V.—In August, 1930, T.O., a male, aged seventy-five years, noticed a lump in the skin of the neck just below and behind the left ear. This enlarged rapidly and ulcerated, and in September it had attained a diameter of five centimetres. It presented the appearance of a typically malignant circular ulcer with raised everted margins. Several smaller non-ulcerated nodules lay in or under the skin adjacent to the main growth, and a small ulcerated tumour was present also on the posterior aspect of the right side of the neck. General examination revealed no other abnormalities. One of the skin nodules was excised for examination, which disclosed the structure shown in Figure IX. My report on this section was: "A highly malignant neoplasm of uncertain origin, consisting of loosely arranged stellate and spindle cells with numerous mitotic figures. It is unlike any of the usual types of carcinoma, and suggests an endothelial origin." In the belief, then, that the growth was probably a primary endothelioma of the neck, thorough radium treatment was carried out during the ensuing four months. Meanwhile, however, enlarged glands became palpable elsewhere in the neck, and the man's general condition began rapidly to deteriorate. In December, persistent cough and signs of right basal pleural effusion appeared, and death occurred in January, 1931. Autopsy disclosed a mass of new growth in the hilus of the right lung, involving the mucosa of the main bronchus as a nodular plaque, and penetrating to the lumen of the main pulmonary veins at several points. Massive tumour deposits were present in the bronchial, tracheal, mediastinal, cervical, lesser omental and cœliac groups of lymph glands. Multiple discrete metastases were present in both lungs, and there was extensive carcinosis of both pleural cavities. Small metastases were present in the liver and in the medulla of the right adrenal. Microscopically all tumours consisted of loosely aggregated spindle-celled or polymorphous-celled tissue similar to that already depicted, but with a suggestion of a clumped arrangement in parts. This feature, as well as the evident origin in the lung hilus with mucosal involvement of the bronchus, and the extensive metastasis to lymph glands, admits of no doubt that the growth was a carcinoma of bronchial origin.

Of recent years it has been recognized that the great majority of tumours which were formerly called "sarcomas" of the lung or mediastinum, are really carcinomata of bronchial origin (Barnard,[1] Simpson,[11] Karsner and Saphir[7]). Histologically, these pulmonary carcinomata display a very diverse structure, from frank adeno-carcinoma or cornifying squamous-celled carcinoma on the one hand to diffuse round-celled, spindle-celled, or polymorphous-celled growths on the other. Further, the primary tumour in the lung may remain quite small and yet produce massive mediastinal or remote metastases (Simpson,[11] Schuster[10]). Probably no other neoplasm is so frequently responsible for first disclosing itself by clinically misleading metastases while the primary growth remains entirely latent. These metastases may simulate primary cerebral tumours (Fried,[5] Ferguson and Rees,[4] Kikuth[9]), or primary bone tumours (Hirsch and Ryerson,[6] Thomas, Hirsch and Blaine,[12] Willis[15]), or primary lymph gland tumours, as in the case just recorded. Because of the structural versatility of lung carcinoma, biopsy sections of metastases masquerading as primary growths in various situations may yield but little useful information or may be actually misleading. Any malignant neoplasm of obscure nature, wherever situated, justifies thorough and repeated clinical and skiagraphic study of the lungs in search for a possible latent primary bronchial carcinoma.

Discussion.

Other workers have commented on difficulties of the kind discussed in this paper. Ewing[3] suspects that many of the alleged sarcomata of the breast, thyreoid, pancreas and prostate, are really anaplastic carcinomata. Kettle[8] has contributed a valuable paper on the polymorphism of the carcinoma cell; he strongly doubts the existence of carcino-sarcoma. Cohn,[2] from a thorough study of many examples, concludes that in highly anaplastic growths no known histological methods permit a sure distinction between carcinoma and sarcoma.

When confronted with a richly cellular tumour whose microscopical appearance affords no clue as to its histogenesis, the pathologist should not take diagnostic refuge behind the term "sarcoma". It is no disgrace to admit that that which is unrecognizable is unrecognizable; and, both for the welfare of the patient and the progress of research, it is far preferable that the report in such a case should state simply that the growth is a richly cellular malignant one of undetermined nature. Certain other considerations may enable the pathologist to suggest the probable nature of such a neoplasm; these are: (i) the situation of the tumour, (ii) the presence or absence of lymph gland metastases.

1. *The Situation of the Tumour.*—Carcinomata are unfortunately very common; sarcomata are relatively rare. Hence an anaplastic growth arising in an epithelial organ is much more likely to be epithelial than non-epithelial in origin. Of course, undoubted sarcomata do occasionally arise from the stromal or muscular tissues of epithelial viscera, such as those of the digestive tract, urinary tract, genital tracts, or the various glandular organs; but the overwhelming predominance of carcinomatous new growths in all these situations demands great caution in pronouncing a tumour "sarcoma", save on clear and unequivocal evidence. To sustain such a diagnosis there must be present, as indicated earlier in this paper, an identifiable degree of differentiation of at least portion of the growth towards one or other of the normal non-epithelial mesodermal tissues, such as smooth muscle, fibrous tissue, lymphoid tissue *et cetera*. A diffusely cel-

lular neoplasm devoid of such differentiation has no claim to the title "sarcoma"; arising in an epithelium-containing organ, it is on *a priori* grounds much more likely to be an anaplastic epithelial growth. On the other hand, if a certainly non-metastatic tumour, possessing an indifferent microscopical structure, can be shown to be unconnected with any epithelial tissue, then it may legitimately be designated "sarcoma"; but in such a case this diagnosis depends not on histological features, but on gross anatomical relationships.

In a recent autopsy on a woman, aged seventy-two years, I observed a large rounded growth occupying the left axilla and pectoral region. It was unattached to any of the contiguous bones, did not involve the skin, and was demonstrably independent of the entirely normal breast, which was displaced anteriorly and caudally by the mass. The only metastases were multiple scattered nodules in both lungs; there were no lymph gland deposits in any of the neighbouring or remote gland groups and no tumours in any other viscus. Microscopically the primary and metastatic growths all exhibited a disorderly spindle-celled and large giant-celled structure with many mitotic figures. Many sections were searched in vain for evidence of the origin of the growth, especially an origin from striated muscle. Despite this lack of any histological indication of its histogenesis, we are justified in calling this tumour a giant-celled sarcoma because of its anatomical relationships; it must have arisen from one of the mesodermal soft tissues in the axilla, fibrous tissue, fat, lymphoid tissue or muscle, but the structure of the growth does not enable us to say from which of these tissues.

2. *The Presence or Absence of Lymph Gland Metastases.*—Excluding primary tumours of lymph glands, that is, lympho-sarcoma and reticulo-endothelioma (both rare neoplasms), lymphatic metastasis from sarcomata of all kinds is an exceedingly rare event. Hence the presence of such metastases is very strong presumptive evidence of the carcinomatous nature of the responsible tumour, however disorderly and atypical its structure. The converse is not necessarily true; not infrequently, as in Case IV of this paper, an undoubted carcinoma, though perhaps yielding widespread hæmatogenous metastases, produces no deposits in lymph glands. If, in addition to producing secondaries in the regional glands, a tumour has arisen primarily in an epithelial organ, then the probability of the epithelial origin of that tumour amounts almost to certainty. Despite these fundamental considerations, however, modern medical literature abounds in reports of tumours of breast, thyreoid, or the hollow epithelial viscera, with abundant lymph nodal deposits, and yet called "sarcomata" merely because they exhibit microscopically a richly and diffusely cellular architecture.

Conclusions.

1. The clinical and histological diagnosis of "sarcoma" or of "endothelioma" is erroneous in an important proportion of cases.

2. Erroneous histological diagnosis is due in most instances to inadequate appreciation of the great structural versatility of carcinomata.

3. Sarcomata can be identified microscopically only when they exhibit a recognizable degree of differentiation towards one or other of the non-epithelial mesodermal tissues.

4. Apart from such differentiation, there is no such thing as a characteristic sarcomatous structure; any or all of the alleged criteria of such a structure are frequently present in carcinomata.

5. Hence, in human oncology there is no justification for the terms "alveolar sarcoma" and "carcino-sarcoma".

6. The diagnosis of sarcoma in many reported cases of anaplastic growths in epithelial organs is erroneous.

7. The presence of metastatic deposits in lymph glands is strong presumptive evidence of the carcinomatous nature of the responsible tumour.

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Legends to Illustrations.

FIGURE I.—The appearance of fibro-sarcoma simulated by recurrent carcinoma of the uterus, Case I. (×125.)

FIGURE II.—The appearance of spindle-celled sarcoma with thin-walled blood vessels simulated in a pulmonary metastasis in Case I. (×125.)

FIGURE III.—Simulation of giant-celled sarcoma in a pulmonary metastasis in Case I. (×125.)

FIGURE IV.—An area of typical clear-celled carcinoma from the kidney tumour in Case II. (×125.)

FIGURE V.—Another area from the same tumour as Figure IV, showing "sarcomatous" structure resembling leiomyo-sarcoma. (×125.)

FIGURE VI.—From an intestinal metastasis of carcinoma of the breast in Case III, mimicking "angio-sarcoma" or "perithelioma". (×125.)

FIGURE VII.—Mammary carcinoma with a spindle-celled "sarcomatous" structure, Case IV. Compare with Figure VIII. (×125.)

FIGURE VIII.—From a cerebral metastasis in Case IV, showing spheroidal-celled *carcinoma simplex*. Compare with Figure VII. (×125.)

FIGURE IX.—From the supposed primary tumour of the neck in Case V, showing the reticulum-like arrangement of the large spindle cells, which led to the suggestion that the growth was an endothelioma. (×125.)

THE COMPLICATIONS AND SEQUELÆ OF THE EXANTHEMATA.[1]

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IT is agreed that the mortality of the exanthemata is often largely due to the incidence of complications and that certain sequelæ may account for long periods of continued ill health and invalidism. It is not possible, within the limited scope of this paper, to attempt to deal in any way fully with these conditions; the observations will be confined to some of the more frequent complications, with particular reference to their manifestations in children.

MEASLES.

Measles has a well known tendency to pulmonary complications, especially bronchopneumonia; this is a serious happening and is associated with a high mortality, particularly in children under three years of age. In regard to this complication, it is the usual experience in practice to find that it is more prone to supervene in measles occurring in children living in poor and frequently overcrowded homes. This raises the question which has from time to time engaged the attention of public health authorities in different parts of the world: first, as to whether some attempt at compulsory notification of measles, at any rate of first cases in a household, together with a home nursing scheme, is desirable; secondly, whether more hospital accommodation should be available for children, especially young children with measles, even at the expense of a less serious infectious disease, such as scarlet fever. In regard to notification, one is aware of the administrative difficulties associated with it, and of the fact that it has been tried and discontinued; but has the last word been said on the matter? I think it can at least be said in its favour that it affords to the public authorities a means of locating the disease and of bringing the hygienic conditions of the infected homes under survey; and it should also help to dispel the all too prevalent idea amongst the public that measles is a trifling disease.

Against the hospital treatment of measles it is argued that the case mortality among patients so treated is considerably higher than among those who are treated at home; but it is generally only the patients suffering from severe and complicated measles who are admitted to hospital. Ellison[(1)] has recently published some interesting figures dealing with this matter, in which he shows that, over a given period, the case mortality among those children who were admitted to hospital suffering from pneumonia was 31%, while among those who were free from pneumonia on admission it was only 1·9%. In summarizing these observations one may suggest that notification and further facilities for hospital treatment are both factors which might receive further consideration as means of controlling an epidemic, and of providing improved care for patients, thus tending to lessen the number of fatal cases and of disabling sequelæ.

Chronic Bronchitis and Fibrosis.

Measles and whooping cough are the commonest causes of chronic infection of the lungs in children; this condition includes chronic bronchitis and fibrosis of the lung (the "damaged lung" of Rivière), with or without bronchiectasis. Children with chronic lung infection are seen in large numbers in the out-patients' department of the Royal Alexandra Hospital for Children, and there is with most of them a history of a previous attack of measles or whooping cough, with pneumonia.

In regard to the clinical features, cough, which is the commonest symptom, is variable, and it may be absent altogether at intervals and return with recurring catarrhal attacks; occasionally it is paroxysmal in character, resembling that of pertussis. The general condition of these patients is often surprisingly good; in the more advanced stages of fibrosis, however, there is generally evidence of malnutrition associated with other symptoms, such as dyspnœa, cyanosis, and clubbing of the fingers. The physical signs are characterized by their variability; there is frequently an impairment of the percussion note at the base of the lung, more often the left, with some alteration in the quality of the breath sounds. The latter varies from that of diminished air entry to harsh or definite bronchial breathing. The adventitious sounds are particularly changeable; they may be numerous at one examination and absent a short time afterwards. These children are sometimes suspected of having tuberculosis. The differential diagnosis is based on the following points. First, intrathoracic tuberculosis, apart from the hilar form, is not a chronic disease in children under ten years of age, in whom chronic lung infections are common. Secondly, the history of contact with pulmonary tuberculosis is important in the possibly tuberculous cases, and of measles or pertussis, with pneumonia, in those with chronic infection of the lungs. Thirdly, in the majority of the latter cases there is no skin reaction to tuberculin. Fourthly, the predilection of chronic infection of the lungs for the bases of the lungs is a helpful characteristic. Radiographic examination is very important, especially since the introduction of lipiodol injections; but, apart from this, it has to be remembered that the interpretation is often difficult in children.

Treatment.

The problem of the treatment of these children whose lungs have been damaged by infectious disease is a difficult one. Undoubtedly much can

[1] Read at a meeting of the New South Wales Branch of the British Medical Association on May 26, 1932.

be done by attention to the naso-pharynx and nasal sinuses, infection of which is commonly present, and by general medical measures. Vaccines seem to be helpful in some instances, but my experience with them has on the whole been disappointing. It appears to me to be an opportune occasion at this combined meeting to urge the claim of general hygienic measures in the treatment of these children, who are mostly from the poorer classes. Both in regard to convalescence from the acute infections, and to the treatment of the lung damage that frequently ensues, these patients do not appear to be given a fair chance. The convalescence is frequently too short and is spent in the home surroundings, which often leave a lot to be desired; the cough keeps up, "as is only to be expected after measles and pneumonia", and little attention is paid to it by the parents. The seed of the chronically infected lung is thus sown. Even when the condition is fully established, the children who can be taken away for a complete change of air under proper hygienic conditions, have an undoubted advantage over those less fortunately placed. The school medical services do excellent work in bringing these children under survey and instituting necessary advice and treatment. Convalescent hospitals are frequently overburdened, and there is sometimes the added difficulty, in regard to children in these institutions, that they must be accompanied by a parent. A philanthropic organization in Sydney has been carrying out very commendable work for some time now in providing suitable food and comforts for children who are convalescent from acute infections. It is this stage, in its particular application to the complications of the infectious diseases, that I would stress as being especially worthy of further help than appears to be available at present, keeping in view the fact that childhood is the period for the prevention of disease and that national health itself is built upon a foundation of the health of the child.

Pulmonary Tuberculosis.

Pulmonary tuberculosis sometimes follows in the wake of measles, which may cause a lighting up of a preexisting or latent tuberculosis, or create conditions favourable to subsequent infection. The most usual form is tuberculosis of the mediastinal glands, or hilum tuberculosis, concerning the incidence of which there is considerable divergence of opinion. Some hold that it is comparatively common; "a very common result of measles is cheesy degeneration of the mediastinal glands and a subsequent tuberculosis of the lungs" (Still[2]). Others consider that "although there are undoubtedly many unrecognized cases of tuberculosis of the mediastinal glands in children, the incidence of this condition has been greatly exaggerated" (Davidson and Pearson[3]). The radiographic findings are liable to conflicting interpretations, and in following the clinical course of these cases over a period of years, one must admit a personal scepticism in the diagnosis of pulmonary tuberculosis in children in the absence of a positive tuberculin test and other clinical evidence.

Other Complications.

Laryngitis.—Laryngitis, in a minor degree, is a frequent occurrence in measles. When present in a severe form, it may be a worrying complication; when this occurs early, it may be impossible to differentiate the illness from diphtheria. Such cases are not uncommon during a measles epidemic. The following history is typical.

> A female child, aged two years, had been ill for three days with sore throat and feverishness; she had begun to lose her voice on the day of examination. There was pronounced stridor, with recession and aphonia, and there were indefinite patches on the tonsils. On the following day a measles rash appeared.

It is always to be kept in mind in this respect that diphtheria is not an uncommon complication of measles.

Ocular Complications.—Ocular complications occur, particularly blepharitis. When eye symptoms are severe, the possibility of ulceration of the cornea should be remembered and a careful examination made accordingly.

Diarrhœa.—Mild diarrhœa, which frequently accompanies measles, may culminate in a severe enteritis, especially in very young and debilitated children, and may delay convalescence or lead to a fatal issue.

Scarlet Fever.

It is with diffidence that I approach the subject of scarlet fever, realizing that it can be efficiently handled only by those who are constantly associated with hospitals for infectious diseases. My contribution will accordingly be but a brief *résumé* of recent literature on the subject, supplemented with some experiences in practice. Although scarlet fever has shown a remarkable decline in mortality during the present century, there has apparently been no marked diminution in the incidence of the disease. The use of antitoxic serum during recent years has been a potent factor in controlling the immediate toxic effects of the illness and also the early local complications arising from an extension of the infective process; but it appears to have little or no effect upon the later complications, which seem to be more common now than previously. These only will be briefly considered.

Nephritis.

It is well known that the incidence of post-scarlatinal nephritis has no relation to the severity of the original disease, as it commonly occurs in mild forms of scarlet fever. I have seen acute uræmia associated with scarlatinal nephritis on one occasion only. In three cases the renal symptoms were immediately preceded by a rise in temperature and a cervical adenitis, a feature which Scholes[4] stresses. The onset of hæmaturia in a child is sometimes the first indication of a previous scarlatinal infection. Though nephritis is always a serious complication, the large majority of patients recover, and the incidence of chronic nephritis is

small. During the years 1923 and 1924 both the incidence and mortality of scarlatinal nephritis in Edinburgh were 100% greater than during the two preceding years.

Adenitis.

Cervical adenitis may occur at any time during the course of the disease, and may go on to suppuration. When it appears late in the illness, it is likely to be an unfavourable complication and the precursor of nephritis.

Otitis Media.

Otitis media is a common complication and not infrequently is a cause of deafness in children. It may be the first indication of a mild non-eruptive type of the disease, as evidenced by the following.

A child was brought to the out-patients' department with a discharging ear. There was a history of a sore throat a short time previously, but no other symptom. Examination revealed cervical adenitis and albuminuria. A relative had recently had scarlet fever.

The occurrence of tonsillitis in families where there is scarlet fever infection must always be regarded with suspicion.

Arthritis.

Arthritis, or scarlatinal rheumatism, may in most cases be classed as a toxic arthritis similar to that which occurs in other infections. Occasionally it is a septic process. Its clinical manifestations are very similar to those of ordinary rheumatism; the smaller joints are more frequently involved. Children who have previously had rheumatic manifestations are more liable to this complication, which may be the precursor of endocardial changes.

Isolation.

Most of the later complications are due to fresh infections, and those which involve the nose and throat are apt to develop into the stage which gives rise to the chronic carrier. In this connexion the question of the release of patients from isolation is an interesting one. Gordon[5] has recently carried out extensive investigations in this respect. He found that in uncomplicated cases of scarlet fever, swabbing of the throat before discharge from isolation, to determine the presence of hæmolytic streptococci, is not justified by results, and that the patient who has no complications may be discharged with equal safety with or without swabbing. In the complicated cases, especially those with rhinitis, swabbing is an undoubted advantage. "The bacteriological control of these cases materially reduced the period of isolation, and the infecting case rate in this group was reduced from 11·9% amongst those not swabbed before release to 5·5%, when two consecutive negative cultures were demanded." The association of the later complications of scarlet fever with fresh infections also raises the point of the advisability of shortening the period in hospital, provided suitable home isolation can be carried out; or, with the same proviso, of encouraging more home treatment of the disease at the outset or some discrimination in the selection of cases sent to hospital, with possible benefit therefrom to some of those infected with a more fatal disease, such as measles. One must realize, of course, that past experience points to the fact that scarlet fever is subject to waves of attenuation and virulence, and that a more severe type of the disease may at any time come upon us.

Conclusion.

In conclusion, I would add that the decline in the mortality rate in scarlet fever and diphtheria during the present century has thrown into relief the continued mortality of measles. During the past four years in London measles has caused eight times as many deaths as scarlet fever, and one and a half times as many as diphtheria. Further, measles accounts for numbers of patients (children) with chronic ill health and pulmonary infection who are commonly seen in out-patients' departments in the hospitals.

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SOME ASPECTS OF SINUSITIS AND OTITIS MEDIA IN THE INFECTIOUS FEVERS.[1]

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Preliminary Considerations.

THE acute infectious fevers may involve portion or all of the upper part of the respiratory tract and its adnexa. The adnexa are the bony recesses whose lining membranes are in continuity with the mucous membrane of the nose and throat, namely, the nasal accessory sinuses and middle ears.

It is now recognized that the mucous membrane of the nasal accessory sinuses is usually involved to some extent in all cases of acute rhinitis. The rhinitis of the exanthemata differs from rhinitis of other infectious fevers only in that it is usually more acute and has, especially in scarlet fever, a greater tendency to tissue destruction. Only when the infection is so virulent or the resistance of the patient is so low that the bony sinus walls are involved, or when drainage is inadequate, can sinusitis be described as a true complication.

The infection spreads to the upper respiratory adnexa (i) by direct spread along the mucous membrane, or (ii) by blood or lymph channels, or (iii) by insufflation of infected material. The sinuses

[1] Read at a meeting of the New South Wales Branch of the British Medical Association on May 26, 1932.

are very liable to infection by insufflation, as they are aerated in every nasal respiration, and it is well known that forceful blowing of the nose may drive infected material from the naso-pharynx to the middle ears.

Drainage is an important factor in determining the result of the infection of the bony cavities. It normally takes place through the same openings by which infection commonly enters. Unfortunately, the openings are easily occluded by swelling of the mucous membrane as a later result of the infection, and thus they sometimes act as valves allowing ingress but preventing egress of infected material.

As regards drainage, the sinuses differ from the middle ears in two respects: they are relatively simple cavities and their openings are really ostia, except in the case of the frontal sinuses, the ducts of which are usually very short and drainage from which is very materially assisted by gravity. The middle ears, on the other hand, are partially subdivided into numerous compartments by the ossicles and their ligaments. Frequently also there are adhesions following previous acute otitis, and this complexity hinders adequate drainage *viâ* the only outlet, the long narrow Eustachian tubes, which are themselves very easily occluded as a result of the infection.

Thus we see that acute sinusitis, although apt to occur more frequently than acute otitis, can more easily undergo spontaneous resolution.

The possible results of further spread of the acute inflammatory process to the neighbouring skull bones, orbits or cranial cavity, are well known, and due importance is attached to them; but serious and, through their insidious onset, less widely recognized, or at least less widely feared, sequelæ often follow, namely, chronic sinusitis and chronic *otitis media*. These aural and nasal sequelæ are often associated and may be either catarrhal or suppurative in nature.

Predisposing Causes.

The incidence of these complications and sequelæ depends on the virulence of the infection and of superadded infection, the local resistance of the affected part, and the general resistance of the patient.

I do not wish to labour the obvious fact that lowered general health predisposes to complications and sequelæ; but in view of the liability of the rickety child to respiratory infections, I should like to mention an experiment[1] illustrating the relation of diet to respiratory disease in animals.

A series of rats fed for a prolonged period on a mixed diet free from fat-soluble vitamins, in time developed a chronic rhinitis with nasal discharge. The condition improved when cod liver oil was added to the diet, and retrogressed when cod liver oil was withheld. The rats were killed and their skulls examined. They were all found to have purulent sinusitis, and the middle ears and mastoids also contained purulent material.

Control animals on the same diet *plus* fat-soluble vitamins were found to be free from any nasal or sinus infection.

The normal nasal mucous membrane is very resistant to infection, but its resistance may be greatly lowered, not only by lessened general resistance of the patient, but also by local pathological conditions caused by previous nasal infection, vasomotor and allergic disturbances, unhealthy tonsils and adenoids and dental caries. In addition local anatomical abnormalities, such as deflection of the nasal septum, enlarged turbinals *et cetera*, sometimes regarded by members of the less enlightened branches of our profession as being of importance only in the imagination of rhinologists, directly by their presence, and indirectly by hypertrophy of the mucous membrane which they are wont to cause, play an important part in predisposing to nasal infection and hindering its resolution. This lowered resistance of damaged mucous membrane to infection has been strikingly demonstrated by Fisher.[2] He inoculated the nasal mucous membrane of a number of healthy rabbits with various pathogenic bacteria. The animals with normal mucous membranes were mildly sick for twenty-four hours and then promptly recovered apparently normal health. He swabbed the nasal fossæ of others of the series with an aqueous solution of phenol. They also were perfectly normal again in twenty-four to forty-eight hours. When, however, he inoculated with bacteria, nasal mucous membranes already damaged by phenol, virulent infection occurred. Eleven of the fifteen rabbits thus treated died, and four recovered after an acute illness lasting four or five days. The *post mortem* examinations showed in every case acute purulent rhinitis, purulent pansinusitis and suppurative *otitis media*. In addition, the infection was found to have involved the lungs and pleuræ; pleurisy and empyema were found in three cases, bronchopneumonia in four cases, and lung abscess in two cases.

Acute Sinusitis.

There is no characteristic symptom of uncomplicated inflammation of the mucous membrane of the sinuses. When abundant muco-purulent nasal discharge is present, it is safe to assume that there is some degree of sinusitis. Nasal respiration can be maintained and drainage from the sinuses assisted by the routine use of a 10% solution of "Neo-silvol" or "Argyrol" in drops in the nose, combined with 1 in 10,000 adrenalin solution. This can be supplemented *viâ* the lachrymal ducts by similar drops in the eyes, but omitting or only infrequently using the adrenalin.

If pain over a sinus is present, it is probable that swelling of the nasal mucous membrane in the neighbourhood of the ostium, aided perhaps by some anatomical abnormality, is interfering with drainage. Treatment now consists in the application of local heat, two hourly inhalations of the vapour from a solution of menthol in spirit, and

shrinkage of the nasal mucous membrane thrice daily, either by a 1% solution of ephedrine as a spray or a swab stick carrying equal parts of 5% cocaine solution and 1 in 10,000 adrenalin solution to the middle meatal region. Gentle mechanical suction once daily after the shrinking also materially aids drainage from the sinuses. These measures, when combined with general treatment, frequently enable the patient to overcome the infection.

If the sinusitis persists, conservative surgical measures, namely, antral lavage and/or partial or complete middle turbinectomy are employed. Such measures may even succeed, if used early enough, when the inflammation has spread beyond the limits of the sinus to the surrounding tissue of the orbit.

Measles and scarlet fever[3] are two of the commonest causes of infection of the orbit. The mode of spread is either direct or *viâ* the numerous venous anastomoses which exist between all the sinuses and the veins of the orbital cavity of the same side.

In severe orbital infections conservative measures should not be employed. Immediate radical external operation is indicated, with removal of all diseased tissue and the establishment of good intranasal and external drainage.

Cerebral complications occur in the same manner as orbital complications, that is, by direct spread or by way of venous anastomoses between the mucous membrane of the sinus and the *dura mater*. Another possible route is along the lymphatics of the olfactory nerve. Radical operation offers a reasonable chance of recovery when abscess formation has occurred, especially if extradural. On the other hand, meningitis and sinus thrombosis secondary to sinusitis are almost always fatal. It should not be forgotten when operating on a patient suffering from orbital or suspected intracranial complication, that more than one sinus may be, and indeed are usually, involved. In the presence of an obvious frontal or antral empyema it is easy to overlook a coexisting posterior ethmoidal or sphenoidal suppuration which may be fatal if drainage is not established. Middle turbinectomy should be performed as a routine step in the operation. One should never be tempted to suture even portion of the wound, which should be left open and packed.

Chronic Sinusitis.

I have only touched on these well known complications of the acute sinusitis of the infectious fevers, as I wish to discuss more fully the chronic sinusitis which may follow, associated as it usually is with various constitutional disturbances. It is sometimes extremely difficult definitely to determine the existing cause of a chronic sinusitis; but it can in many cases be definitely attributed to one or other of the infectious fevers. Measles and whooping cough are perhaps the commonest individual causes; but often there is a history of its commencement after the last of several infectious fevers, as if the foregoing ones had prepared the soil by damaging the mucous membrane of the nose or sinuses. The onset is usually insidious, and even the established condition may be unsuspected.

The only constant symptoms are chronic nasal or post-nasal discharge, a tendency to frequent colds and lowered general health. There are usually some nasal obstruction and cough. Headaches, in my experience, are rarely complained of by children. On examination the nasal mucous membrane is swollen, and discharge is usually seen in the nose or post-nasally. Almost constantly some or all of the rest of the respiratory tract is involved in the chronic inflammatory process. The associated chest condition often dominates the clinical picture.

The first reference to the association of chronic sinusitis with chronic bronchitis in Australia is A. E. Mills's report of three cases of chronic bronchitis in children in whom the antra were found to be full of pus by the late Herbert Marks. Since then numerous cases have been noted, and at the Royal Alexandra Hospital for Children it is now the custom, when investigating children suffering from chronic pulmonary catarrh or suppuration, to have the sinuses examined by X rays at the same time as the chest. Chronic sinusitis is very frequently found to coexist.

In the report of his cases Mills discusses which is the primary lesion, and inclines to the view that the upper respiratory infection is secondary to the chronic bronchitis. There is evidence that sometimes the reverse may be the case. Stillman's experiments[4] have shown that droplet infection can pass direct from the upper to the lower respiratory tract. Also iodized oil inserted into the nasal passages during sleep has later been demonstrated in the lungs by X rays. Lung complications also followed nasal infection in Fisher's experiments quoted above. Finally, one may instance the common experience of acute bronchitis following acute rhinitis.

Among other results of chronic sinusitis, one may mention various disturbances of the alimentary tract caused by swallowing the post-nasal discharge, and in addition any of the numerous results of focal infection. Acute exacerbations of the chronic sinusitis also occur.

We therefore see that chronic sinusitis, the onset of which may be unheralded by any alarming symptoms, may be an extremely serious sequela of the infectious fevers.

The Prevention of Chronic Sinusitis.

Treatment of the established condition is often unsatisfactory, and prophylaxis is therefore all-important. Prophylaxis is, of course, a very big problem and embraces such matters as the prevention of spread of infectious disease, oral, nasal and general hygiene, artificial immunization, treatment during the acute stages, and the management of convalescence. Because all these matters are concerned in its ætiology, chronic sinusitis occurs more frequently in children of the poorer classes.

If nasal or post-nasal discharge is noted in convalescence, a nasal swab should first be taken to exclude diphtheria.

General treatment is, of course, of supreme importance, especially rest, fresh air, exposure to the sun, and a proper diet with a high vitamin content. An autogenous vaccine may also be of use. Local treatment by nasal drops *et cetera*, as described above, should be continued, and a mild alkaline nasal douche used in addition. Adenoids, if present, should be curetted and dental caries attended to. Tonsillectomy should be considered and, if necessary, should be carefully and completely performed. Many cases of chronic sinusitis are seen in children with tonsil "stumps". The results of partial tonsillectomy are so bad that its performance is now inexcusable.

If symptoms and signs persist, X rays or explorative suction or proof puncture of the antra should be used to determine whether a sinusitis is persisting. The antra are most frequently affected, and treatment of them consists of lavage twice a week. This clears out not only the antrum, but the infundibulum and the middle meatus, thus aiding drainage from the anterior ethmoidal and frontal sinuses, if they are also involved. It also assists further antral drainage by restoring the activity of the ciliated antral epithelium. Lavage of the other sinuses is difficult and somewhat dangerous in children.

This treatment should, if used early enough, greatly reduce the tendency to the development of chronic sinusitis. If it is unsuccessful, operation is necessary.

When the antra are chronically affected, intranasal antrostomy is the operation of choice, and this operation also indirectly aids drainage from the anterior ethmoidal and frontal sinuses. To obtain easy and painless post-operative access to the antrum, it is sometimes necessary in young children to remove the anterior end of the inferior turbinal, but in older children the intact turbinal may be swung inwards and upwards. In refractory cases middle turbinectomy, partial or complete, may be necessary further to assist drainage from other sinuses. Radical operation for chronic sinusitis in children is rarely indicated, except for some complication of an acute exacerbation.

Operation, however complete, is not invariably successful. One often sees such phrases as "foci of infection in the upper respiratory tract must be dealt with", but it is not as easy as it sounds. Improvement, however, can almost always be obtained, even when a pansinusitis is present.

Acute Otitis Media.

I have already drawn certain comparisons between acute sinusitis and acute *otitis media*, and I would now draw your attention to other points of similarity and dissimilarity. The delicacy of the auditory apparatus renders it far more liable to damage by even brief inflammatory involvement. Each day that an acute *otitis media* continues, makes permanent damage to the sound-conducting apparatus more probable. Spontaneous resolution is less frequent, as natural drainage is less free.

The mastoid antrum plays a very similar part in middle ear suppuration to that of the maxillary antrum (and the other sinuses) in rhinitis, that is to say, its lining membrane is usually involved in the inflammatory process by direct spread through an ostium, in this instance the *aditus ad antrum*. So long as the adjacent bone is not involved and drainage is adequate, no characteristic signs of its involvement are seen; but the discharge drains from it into the middle ear and hinders resolution of the *otitis media*. Hence it plays an important part in prolonging the disease and thereby increasing the likelihood of subsequent deafness and chronic suppuration.

The frequency with which middle ear suppuration is prolonged in a similar manner is strikingly demonstrated by the rapidity with which it disappears when the mastoid is opened for acute mastoiditis.

The sequelæ of acute otitis also resemble those of acute sinusitis in their unobtrusive onset and serious results.

The course of suppurative *otitis media* is as follows:

1. It heals without complications in a few days to a few weeks, aided perhaps by paracentesis and by treatment to the nose and throat.

2. It causes acute mastoiditis, which usually responds to mastoid drainage, provided operation is performed reasonably early and thoroughly. In a large number of these cases the middle ear suppuration rapidly subsides, the process being aided, when necessary, by attention to the nose and throat. The hearing in such cases is quite as good afterwards as when healing occurs in the same length of time without mastoiditis.

3. Suppuration persists without mastoiditis for more than a few weeks, by which time complete recovery of the middle ear function is no longer possible.

Chronic Otitis Media.

A child is discharged from hospital after an infectious fever with some aural discharge still present. The case notes show that while in hospital the discharge is steadily diminishing and that the ear is "nearly dry" or "very nearly dry" on the day he leaves. What is the further progress of such a child? Sometimes the ear fulfils its promise and eventually is completely dried up by antisepsis—either medication or ionization, together with attention to the nose and throat. But even if healing does eventually occur, the patient is destined to suffer from middle ear deafness. This may be only of mild degree for some time, but it tends to be progressive and to be followed by secondary inner ear degeneration and so-called "nerve" deafness. Quite often, however, the suppuration continues and the patient becomes the unfortunate possessor of a chronic running ear. If allowed to continue thus,

the patient suffers from the discomfort and disability of impaired hearing, aural discharge *et cetera* for a varying period of years; almost inevitably the suppuration sooner or later involves one or other of the vital structures in the neighbourhood.

Extensive radical operation is then performed, which may or may not save the patient's life, and if he survives, the hearing on the affected side is now further diminished or completely destroyed.

Alternatively, an earlier attempt is made to cure the chronic suppuration of the child's ear by one or other of the modified radical operations, hoping thereby to preserve moderate hearing. The treatment after these operations is so important and at the same time so difficult in children that the results are not uniformly good, and in many cases little improvement is obtained. The modified radical operation is not infrequently followed later by a complete radical operation. This operation is not without slight risk. If successful, it completely removes the danger of intracranial complications, but it leaves the patient very "hard of hearing", ultimately, if not immediately.

Prevention of Chronic Otitis Media.

Prophylaxis of deafness and chronic suppurative *otitis media* is highly important, and it depends on the early recognition and treatment of acute *otitis media*. The possibility of the occurrence of acute *otitis media* in any infectious fever should always be borne in mind. As its onset may be painless, the drums should be regularly inspected and the hearing tested daily with a watch. If it does occur, paracentesis should be performed without delay. In scarlet fever paracentesis should be performed at the earliest sign of inflammation of the drum, that is, without waiting for it to become red and bulged. In addition, treatment to reduce congestion and swelling in the nose and throat is employed, which is in many respects similar to that recommended for acute sinusitis. If acute mastoiditis supervenes, the mastoid antrum is opened and drained.

In all cases, and especially when aural discharge persists, adenoids should be curetted as soon as possible, dental caries attended to, and, if necessary, tonsillectomy performed. Coexisting nasal sinusitis should be looked for and treated. If, in spite of these measures and general treatment, the aural discharge lasts for some five or six weeks and does not show definite promise of shortly ceasing altogether, it is desirable that something more be done to prevent the continuation of the suppuration which now threatens to be indefinitely prolonged. I suggest that the correct procedure in many cases is to open and drain the mastoid antrum without further delay, even in the absence of symptoms and signs of mastoiditis, with the object of aiding the middle ear to return as rapidly and as nearly as possible to normal. This, I know, sounds a rather drastic measure for what is too often regarded as an unimportant condition. But it is a simple and safe procedure in experienced hands. I have seen innumerable examples of serious results from delayed mastoid drainage, but I have yet to see any ill effects from its early establishment. When no abnormality exists in the nose or throat, even earlier mastoid drainage should be considered, especially in post-scarlatinal otitis.

I feel certain that this suggested extension of the usually accepted indications for drainage of the mastoid antrum will save many patients from the disability and discomfort of deafness. But more especially it should lessen the incidence of that tragic sequela of the infectious fevers, with all its dangerous possibilities, known as chronic "running ear".

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THE MYTH OF CONSTIPATION AND THE PANDEMIC OF APERIENTITIS.[1]

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I AM not unmindful of the revolutionary character of my text. I would expect at the outset to be received with antagonism, incredulity, and even derision. Armed, however, with a sincere belief in the truth of my ideas, and in the importance of their recognition, I find myself with courage enough to ask you to listen with tolerance; and if in my bucolic ravings you come to see a glimmer of truth, I will have my reward.

On first entering the portals of medicine I was taught, and ever since that (alas!) becoming misty date I have been taught, the terrors of constipation. I believed that there could be no *mens sana in corpore sano* without a daily evacuation of the bowels. A loaded bowel spelt to me absorption of toxins, a veritable plethora of ills. Does not the Press, both lay and medical, abound with epics on the virtues of this and that aperient, and on the baneful load of woes that falls crushing on the head of him who fails to evacuate daily? Even to the Army has this insidious cult penetrated; for where the Spartan youth, as he stepped from his home, was adjured to "return with his shield or upon it", the warrior of today is told to "keep his bowels open and his powder dry". Nor is literature alone spreading this gospel. Do not we as a profession follow this false faith? Do we not tell our credulous patients, who hang on our every word, that they must evacuate each morning, even at the same time, or suffer the dire consequences? Are we

[1] Read at the second annual reunion of the Residents' and Ex-Residents' Association, Royal Prince Alfred Hospital, Sydney, October, 1931.

not high priests of the cult of the empty sigmoid? Constipation is largely a myth. Defæcation is a natural act and should be left to Nature, and in the majority of cases deserves no more meddlesome interference than the act of urination.

Physiologically we have always been and always will be animals. Why should *homo sapiens* alone of the vertebrates find Nature forgetful of her duty in this respect? Does your purring Persian "meow" for *magnesii sulphas*? Does your howling hound jump for jalap? No! Are they any the worse for not having them? No!

The quantity and quality and periodicity of evacuations show wide normal variations and depend on the interrelation of: (i) the quantity ingested, (ii) the quality of the ingesta, (iii) the quantity absorbed, (iv) exercise.

Now it is quite possible for a human to remain in excellent health and so to arrange these above-mentioned essentials that he has one evacuation per week. It is also possible for one to be in equally robust (but not any the more robust) health having two motions *per diem*. Both are normal. I have come in contact with instances of both. The person of the first type is not distended, and, left to his routine, is hale and happy. He is not suffering from anything. He is behaving normally. If you will persist in calling his condition "constipation", then constipation is in this case a normal condition. Should he not be groaning under a load of septic intoxication? Let us for a moment concentrate our attack on and shatter this spectre of bowel toxæmia. This is the question I have asked myself again and again, and now I ask you. How, in the name of common sense, can the evacuation of the contents of six to ten inches of rectum and sigmoid on Monday morning save us from untold horrors when four feet of the same or similar contents remain behind? Do these last few inches contain all the elements of poison and woe whilst the remainder is loaded with health and joy? And, if so, when do the last six inches of today's virtuous "Jekyll" become tomorrow's sinister "Hyde"?

The disciples of Lane will tell me my reasoning is wrong and that the caecum is the witch's cauldron where trouble is brewed, "For a charm of powerful trouble—like a hell broth boil and bubble". If so, I cannot see how aperients can influence the toxæmia. They can only change more rapidly one brew of the "cauldron's hell broth" for another brew. A veritable "double, double toil and trouble". Careful and unbiased observation will disclose numbers of cases where delay in the passage of the contents of the bowel is not accompanied by any toxæmia. It is our duty to recognize this and to avoid unnecessary interference. This delay is, in the vast majority of cases, normal slow progress of a normal small stream. The rate of flow is less because the *vis a tergo* is less, and a stream of larva is slower than a stream of water.

An old resident of Kiandra, who was hale and hearty till the machine wore out at four score years, habitually evacuated once a week.

A youth of about thirteen years, looking fit, and vowing he felt well, walked into the out-patient department at Valentine Lane in 1906. He told me he felt a "bit tight"; he looked as though he might be eight months pregnant, and said: "Please, Sir, I haven't been to the 'W' for three weeks and five days". We manually removed from the rectum a cricket ball of hard, dry, friable grey fæces and expressed a third of a bucketful of semi-solid stool. Within five days he had about twenty large motions and his abdomen became flat. He was, of course, suffering from Hirschsprung's disease. He had been eating and drinking and exercising with the vigour of youthful optimism. The word "toxæmia" appeared to be absent from his vocabulary.

I recall another patient suffering from Hirschsprung's disease, whose abdomen I opened some six years ago. I found, in the enormously thick-walled transverse colon, a mass of fæces the size of a football, hard, grey and dry. This had been accumulating for not less than eighteen months, liquid fæces passing round it. Whilst blushing for my surgical effort, in that I opened the colon and evacuated this mass, I at least learnt that this man had, till the day I operated upon him, worked hard, and it was only the mechanical jolting of riding a bucking horse that wedged this mass into his pelvis and caused the pain that prompted him to consult me. Later on I short-circuited his bowel and excised the billabong, and he has been very well since. The adherents of the bowel toxæmia theory, with an argument more convenient than convincing, say that these persons have become "immune".

Is your hæmorrhoidectomy patient groaning in toxæmic torture with a bowel confined for five or six days? On the contrary, is he not much happier than the heroically and often unnecessarily bepurged victims of well meaning but misguided attempts to get something out of nothing after many other operations? And did I not hear at our last annual gathering that the forty-eight-hour appendix, which all of us who have done any surgery have long ceased to touch if we can possibly avoid it, with, mark you, a lesion which should not lessen bowel toxæmia, is treated with no operation, no aperient and much success. I refer, of course, to the Ochsner-Sherren treatment. It would seem evident, and yet we are blind to it, that, given a small quantity of food which is mostly absorbed, a limited quantity of fluid, a marked degree of muscular exertion, a dry atmosphere and a copious skin action, there can and should be only a small dehydrated evacuation. This is not constipation; it is the normal condition. It needs no treatment. To give aperients here is only to do harm. If the patient is unmindful of it, certainly it should be left unmentioned. If he is worried, then the only remedy necessary is to increase that quantity and fluidity of the intake, and, *ipso facto*, the output.

Many a man has worked hard and been fit and well on beef, "damper", "browny" and tea, having an average of two evacuations a week. Bligh, who, with consummate leadership, brought his eighteen men to Timor in an open boat, says in his diary, on June 1, 1789: "Most of us had had no evacuation of stool since we left the ship." They had been put off the *Bounty* on April 28, thirty-four days before. Their daily ration had only been eighteen grammes (one-twenty-fifth of a pound) of bread three times a day for part of the time and twice a day for the remainder. This was weighed in two coconut shells, in one of which was a pistol shot.

The ship's surgeon was probably so absorbed in his own physical and mental discomfort that he was spared the torture of mind that would surely have assailed him had he asked his patients each morning whether their bowels had been satisfactorily opened.

The afternoon is hot and dry. You play hard tennis, or make your usual century at cricket, or hack your way with muttered curses through the rough, and you sweat gloriously. Do you in a panic rush to the diuretic bottle because at 6 p.m. you pass six fluid ounces of urine where the day before you passed sixteen? No, you have not yet been led astray by the cult of bladder toxæmia.

To sum up, then, I believe that a large number of people are obsessed with the idea that they are suffering from a disease that is called constipation, when in reality they are reacting normally to variable conditions. They should be told to forget all about their bowels.

"Aperientitis."

Now let us concentrate our energy and attack this increasingly growing and ever-raging pandemic of "aperientitis". I believe that the harm done by aperients grossly outweighs the good. Upsetting the normal routine of the gastro-intestinal tract, they cause irritation and indigestion, and are a source of hæmorrhoids. Some of them give rise to a good deal of abdominal discomfort and pain, and might they not be guilty of affecting detrimentally the whole chemistry and physics of digestion and absorption of foodstuffs? This is worth more than a passing thought. I will, however, throw humility to the wall and boldly and emphatically assert that aperients are the greatest cause in humans of so-called constipation.

Regard for a moment two types of *homo sapiens*: A, comprising 20%, and B 80% of people. A is care-free. He takes no thought of his bowels. He does not even know whether they were opened today or not. There come periods when, owing to reasons previously outlined, A will miss two or three days. Does he burst? No. Is he haggard and drawn and drooped in melancholy from bowel toxæmia? No. He just does not think about it. He takes no aperient. There comes the inevitable *vis a tergo* and his bowels move. "Ever joyous, ever gay, happy, undeserving A."

But B is far otherwise. He, like A, may miss a day. Panic seizes him. He knows he should have headache, lassitude, pain in the back, and forthwith he has them. Confronted by the grim spectre of bowel toxæmia, he hastens to swallow some aperient, and always too much. There follows the purge and the canal is emptied, not for fifteen centimetres (six inches), but for sixty centimetres (two feet). Now comes the trouble. He is indeed lost, for his feet are set in a melancholy vicious circle. Left alone, the bowel contents would fill the rectum after forty-eight or seventy-two hours. That is, he should not expect the desire to defæcate until two or three days have elapsed. Does B wait? No. Steeped in the cult chanted to him by us, the cult of daily evacuation, he believes he is again constipated, and so he takes more aperients and ever more. And so we find the world full of "wretched meritorious B's", many masculine, and still more feminine, consuming every day of their lives two or three patent aperient pills or other harmful and unnecessary goads to a willing but groaning intestinal tract. It is our duty to see that B should enjoy A's happy lot. Why should the family line up once a week for a dose of aperient? Why take the willing horse out of the stable once a day and flog the poor brute?

GALL-STONES FOUND POST MORTEM.

By IAN HAMILTON, F.R.C.S. (England),
Demonstrator in Pathology, the University of Adelaide; Clinical Assistant to the Surgical Section, Adelaide Hospital, Adelaide.

IN the careful analysis of the records of gall-stone cases in which *post mortem* examination was performed at the Adelaide Hospital, among the 1,000 autopsies carried out between the years 1925 and 1929, and epitomized and reported in *The Medical and Scientific Archives of the Adelaide Hospital*, Number 9, 1929, several interesting points emerge.

As a preliminary to the statistical investigation, a survey of the age incidence in the 1,000 cases was made. The graph shows that for each decade there is a steady and almost constant rise until the 51-60 period, when the peak is reached. The curve from the first to the seventh decade follows a parabolic course, then a sudden drop occurs in the eighth; very few patients over ninety years of age are examined *post mortem*.

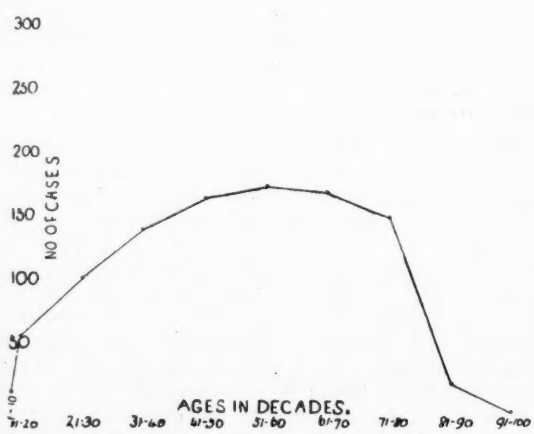


FIGURE I.
Graph showing the age incidence of 1,000 patients examined *post mortem*.

The Incidence of Gall-Stones.

Glancing now at the graph showing the incidence of gall-stones in these cases, it will be seen that in the first and second decades no cases occurred; this

ILLUSTRATIONS TO THE ARTICLE BY DR. RUPERT A. WILLIS.

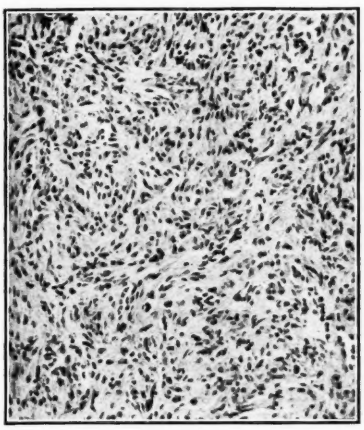
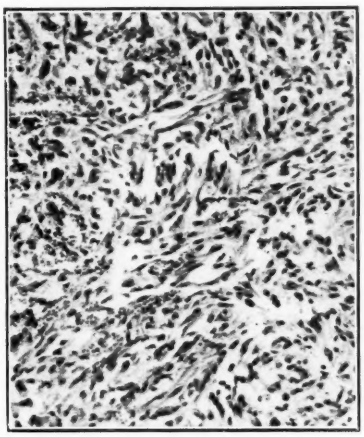


FIGURE I.



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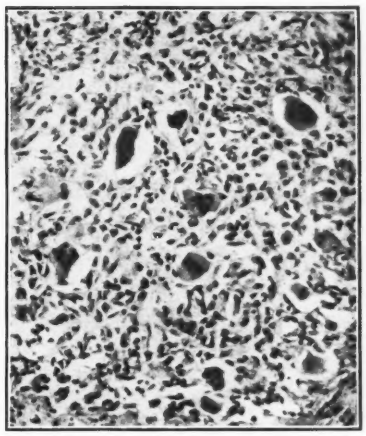
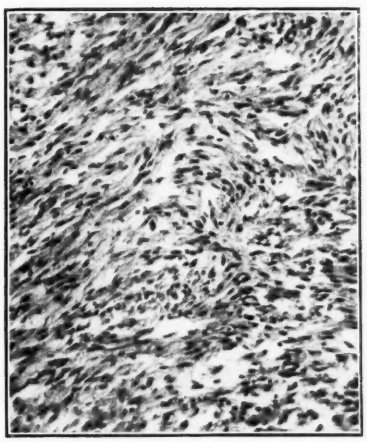


FIGURE III.

FIGURE IV.



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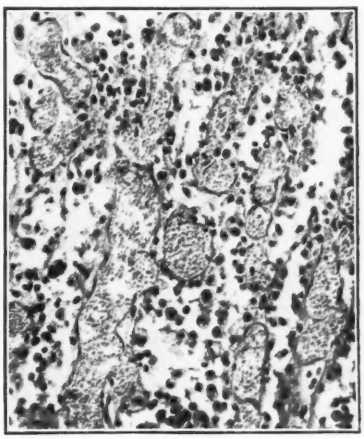

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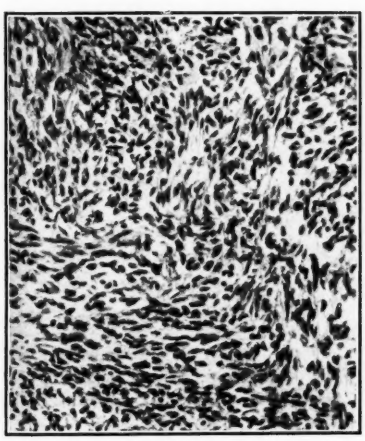

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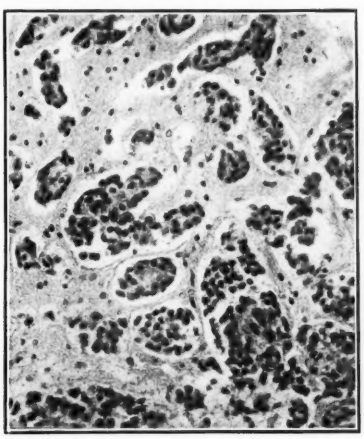

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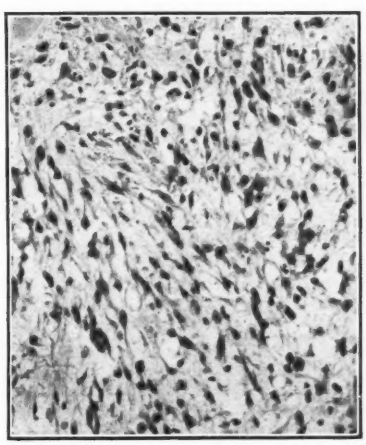

FIGURE IX.

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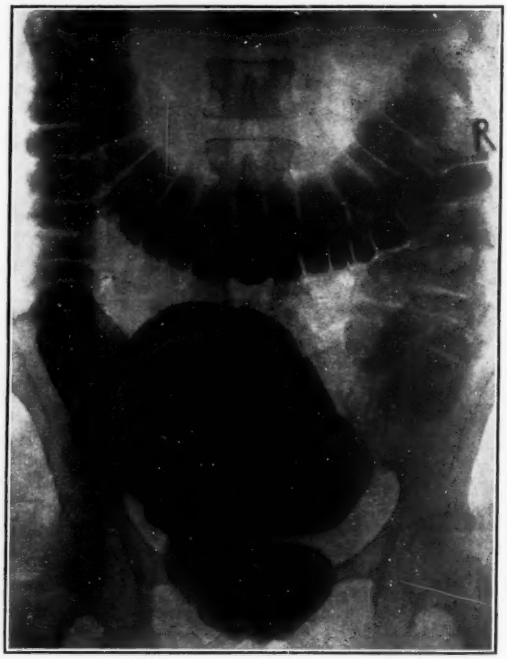

FIGURE I.
A radiograph taken after the administration of a barium enema given to a patient who had passed no normal stool for six months, had lost a considerable amount of weight and had bled almost daily from the bowel. She was convinced she had malignant disease of the colon. Diagnosis: "Aperientitis" or "cancerphobia".

FIGURE II.
From the same patient as Figure I, taken immediately after an evacuation, showing how, in this case, the bowel is emptied back to the transverse colon.

FIGURE III.
The appearance of the large bowel in an adult, eating, living and working normally. Just enough barium is present to throw a shadow. The rather constricted descending colon looks abnormal, but is probably the normal appearance of this part of the bowel when filled with normal semi-solid contents. The last part of the rectal contents have not received any barium and are only faintly discernible.

FIGURE IV.
A radiograph taken after normal defæcation.

ILLUSTRATIONS TO THE ARTICLE BY DR. J. V. DUHIG.

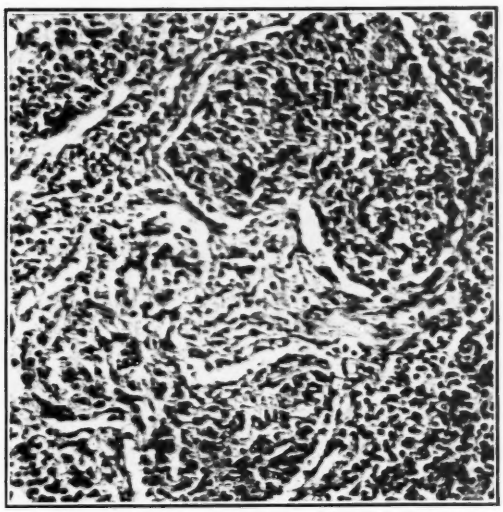

FIGURE I.

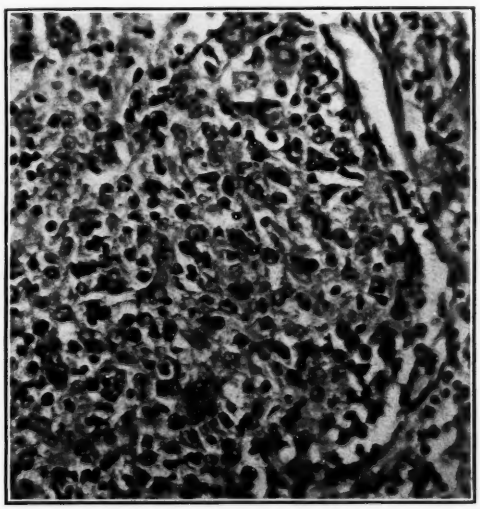

FIGURE II.

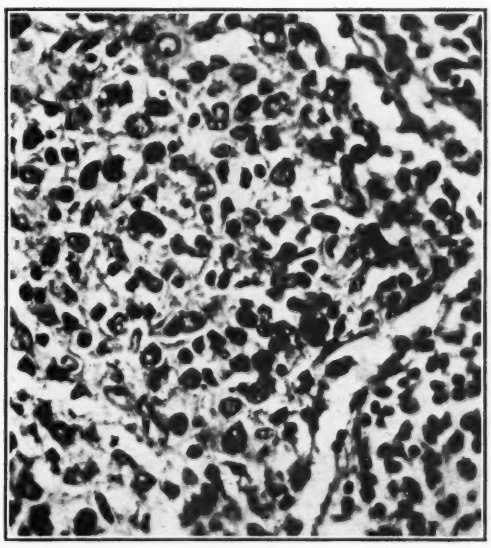

FIGURE III.

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ILLUSTRATIONS TO THE ARTICLE BY DR. A. J. COLLINS.

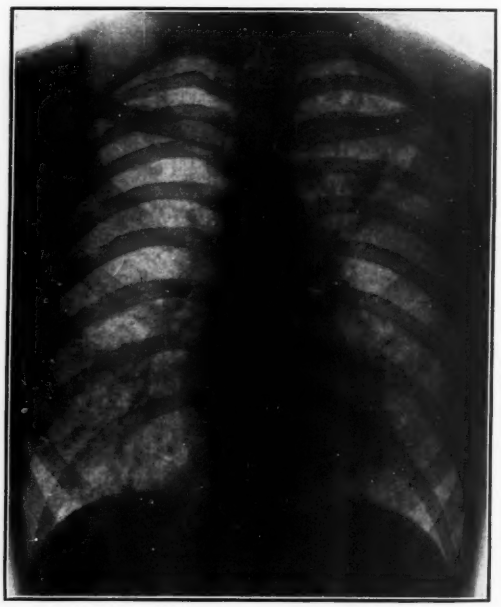

FIGURE I.
X ray appearances of lungs before commencement of Treatment (Case I).

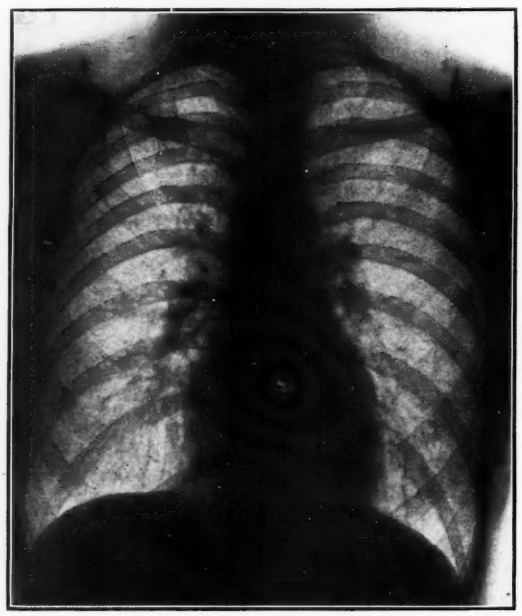

FIGURE II.
X ray appearance of lungs after twelve months' artificial pneumothorax treatment, showing lung reexpanded and absence of recognizable tubercular mottling (Case I).

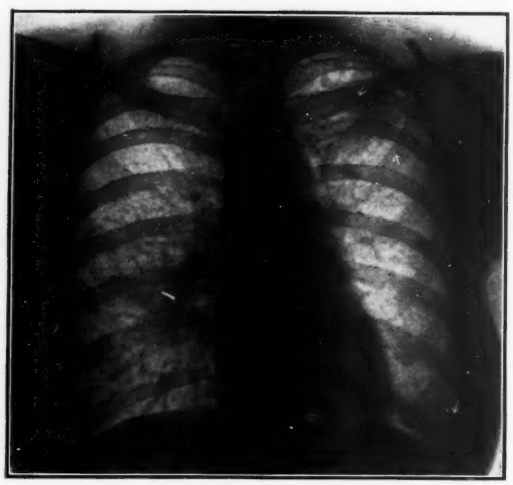

FIGURE III.
X ray film of lungs (October 1, 1929) before commencement of treatment (Case II).

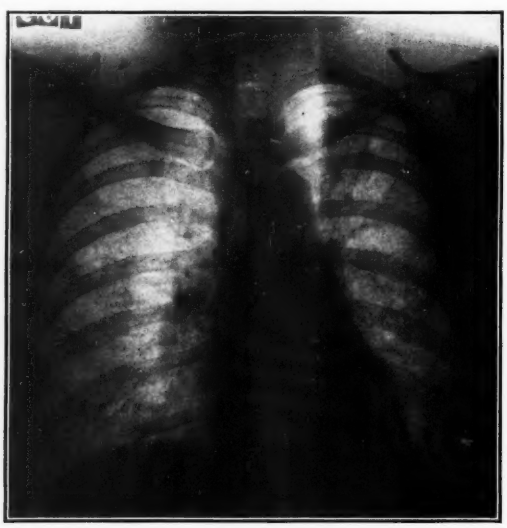

FIGURE IV.
X ray film of lungs (September 16, 1931) showing marked diminution in and changed character of apical lesion after two years' treatment by artificial pneumothorax (Case II).

corresponds with Ophüls's[1] findings. A few were found in the third decade, and from then until the fifth decade the curve took a sharp rise, gradually fell to the seventh decade, and then finished with a steep drop to the eighth decade. There is no resemblance between the above graph and that showing the age incidence in the series of *post mortem* examinations. The interpretation of this is that most gall-stones are formed between the ages of forty and sixty years. As most pregnancies occur between the ages of twenty and forty years, there would thus seem to be little direct connexion between pregnancy and gall-stone formation.

FIGURE II.
Graph showing the age incidence in 106 cases of gall-stones in 1,000 *post mortem* examinations.

In the next graph the males and females are separated one from the other, and the actual numbers in each decade are plotted. The incidence in males, as it would be if there had been the same number of *post mortem* examinations on persons of both sexes, is also shown.

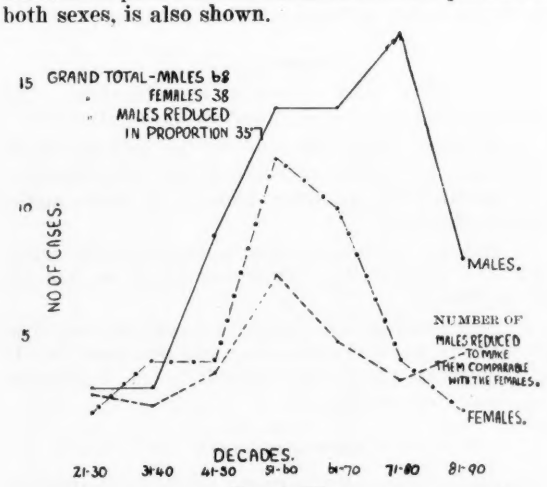

FIGURE III.
Graph showing the sex and age incidence of gall-stones in patients examined *post mortem*.

This curve supports the findings of most clinical investigators, that considerably more females than males suffer from gall-stones, although our series does not show the great preponderance of females sometimes seen; for example, Adelaide Hospital clinical records show 85·2% women in 312 cases of gall-stones (one disregards the ends of the curves because the numbers are insufficient to be of statistical value). A curious and interesting point is that the incidence runs almost parallel in the two sexes, the top of the curve being reached in both cases in the fifth decade. This, combined with the remarks on the previous curve, would seem to exclude pregnancy as a predisposing cause; otherwise, one would have expected a greater number at an earlier age in the females. It would thus appear that the causes of gall-stones are the same in both sexes.

Now that the figures of the cases in all decades have been analysed, it can be stated what percentage of the population of a certain age might be expected to have gall-stones.

TABLE I.
Showing the cases of gall-stones in each decade, total percentage, percentage of males and females.

Age.	Number of Cases of Gall-Stones.	Percentage of all People.	Percentage of Females.	Percentage of Males.
21-30	5	4·6	3·8	5·4
31-40	7	4·8	6·5	3·6
41-50	13	7·5	8·1	7·3
51-60	26	14·2	19·5	11·7
61-70	24	13·4	21·7	10·6
71-80	21	20·0	28·1	18·6
81-90	10	38·4	22·2	47·0

Of all patients who died, 10·6% had gall-stones, irrespective of whether or not they had symptoms therefrom, and irrespective of the cause of death. If symptoms of dyspepsia were included, obviously the percentage in which gall-stones were present would be much greater.

It is of interest to compare this with Ophüls's figures (Table II), which show that at Stanford,

TABLE II.
Ophüls's figures for the incidence of gall-stones.

Age Group, Years.	Number of Cases.	Percentage of Cases in this Age Group.
20-30	3	1·2
30-40	19	4·2
40-50	33	5·9
50-60	53	9·4
60-70	62	13·2
70 and over	36	19·1

in the United States of America, the greatest number occurs at a decade later than in Adelaide, but that, as here, the percentage incidence is greater in the later decades and has a regular and continuous rise through the decades.

Among the 1,000 *post mortem* examinations, of which 675 were on males and 325 on females, gall-stones were found in 106 (10·6%). The males with gall-stones numbered 68 and the females 38.

Ophüls found 214 cases in 3,000 *post mortem* examinations, or 7·1%, with 5·86% in males and 10·65% in females. The youngest patient in the series was 27 years old, and the oldest 90; two were jaundiced; single calculi were present in 21 cases, and multiple in 85.

Association of Gall-Stones with Other Conditions.

Atheroma.

Twenty-nine of the patients (26·4%) were found to be afflicted with atheroma sufficiently marked for it to be referred to in the summary of the *post mortem* examination, whereas in only 8% of all the cases in the series of 1,000 *post mortem* examinations was this condition pronounced. It is not clear what connexion, if any, may exist between atheroma and gall-stones. Miller[2] recently mentioned the high incidence of atheroma and said that one of the effects of chronic gall-bladder disease was to produce early a severe arterial degeneration.

Injuries.

Six of the patients died of injuries, some involving the cranium and its contents; in several cases there were multiple injuries.

Diabetes, Pancreatitis, Cirrhosis.

Four had diabetes, seven pancreatitis (6·5%), and six cirrhosis of the liver, making seventeen, of which a big percentage probably were directly connected with the cholelithiasis or cholecystitis. Here is an argument favouring early and radical treatment of gall-bladder disease. In Ophüls's series pancreatitis was present in 6·5% of the cases.

Carcinoma.

Of the 196 cases carcinoma of the gall-bladder was present in four. One other carcinoma of the gall-bladder occurred, but not in association with gall-stones. This makes a total of five in the 1,000 cases. This shows that in 80% of the cases of cancer of the gall-bladder, calculi were present. Boyd[3] mentions 80% to 90% as the common figure. The Adelaide Hospital patients were all males, whereas Boyd says cancer of the gall-bladder is commoner by four or five times in women. In the Stanford series carcinoma was present in 9% of all cases.

Types of Carcinoma.—Most carcinomata of the gall-bladder are of the adeno-carcinoma type, and may be papillomatous or diffusely infiltrating, the latter being the commoner. Occasionally a process of metaplasia occurs and a squamous-celled carcinoma may appear, arising from the columnar cells. In this series sections of the gall-bladder were not saved in all cases; apparently in Case 105/28 the section was from a generalized mass of new growth near the gall-bladder, as also in 42/27. Copies of histological reports follow.

150/26 (male, aged fifty-two years).—Gall-bladder wall: There was much fibrosis, infiltration throughout with groups of carcinoma cells, in places with regular tubules. Irregular cystic cavities of the columnar epithelioma at the junction with the liver. Fat near gall-bladder showing extensive infiltration with columnar epithelioma. Intestines showed extensive infiltration of the serous coat.

42/27 (male, aged seventy-six years).—The liver section shows extensive diffuse infiltration with spheroidal carcinoma cells and suggestive of a lumen in places, but not definitely tubular.

105/28 (male, aged seventy-three years).—Section from near gall-bladder shows colloid carcinoma with remnants of tubules.

48/29 (male, aged forty-six years).—Section of gall-bladder shows a carcinoma with fairly large cells, a tendency to tubular arrangements and much necrosis in places.

120/29 (male, aged fifty-nine years).—Gall-bladder shows a growth with very dense fibrosis and spaces filled with or lined by very large irregular carcinoma cells; two or three calcified areas. Some of the spaces are now devoid of living cells; elsewhere a tubular arrangement of the cells. Necrosis in places near the surface. Liver showed large masses of cells, some individual cells huge, with several or many nuclei; some cells with cell inclusions; most of cells smaller, occasionally with a suggestion of tubule formation.

Carcinoma Elsewhere.—In fifteen cases carcinoma was present in various other situations, for example, the stomach, breast, lung, œsophagus, prostate. Some of these were unsuspected and discovered only during routine *post mortem* examination of the organs. This gives a percentage of 14·1, whereas of all the gall-stone patients the percentage who had carcinoma was 19·6 (including the 4·5% of gall-bladder carcinomata). This is a high figure, but it will be remembered that the majority of the patients are within the cancer age; of the 1,000 patients examined *post mortem*, 119 (11·9%) had carcinomata. It has been suggested that a disorder of cholesterol metabolism may occur as a causal factor in both gall-stone formation and carcinoma. These figures suggest that some such common factor does exist. One doubts if the general public and the members of the medical profession realize that the proportion of gall-stone subjects who develop carcinoma of the gall-bladder is so high. The danger of its development is a legitimate argument for the early operative treatment of gall-stones and for cholecystectomy as the operation of choice.

Summary.

1. In 1,000 *post mortem* examinations, 106 patients, or 10·6%, were found to have gall-stones.

2. In nine death was due to the gall-stones or conditions intimately associated with this disease.

3. About twice as many females as males suffer from gall-stones.

4. The age incidence is about parallel in the sexes, and it is argued that pregnancy plays no part in the incidence.

5. In a considerable proportion serious complications occur, such as carcinoma and pancreatitis. It is suggested that this should be a legitimate argument for operation.

Acknowledgement.

I wish to place on record my sincere gratitude to Professor J. Burton Cleland, of the University of Adelaide, for placing at my disposal *post mortem* material and records in the Department of Pathology and for his valuable help and encouragement.

References.

(1) W. Ophüls: "A Statistical Survey of Three Thousand Autopsies from the Department of Pathology of the Stanford University Medical School", *Stanford University Publications, Univ. Scr. Med. Sc.*, Volume I, 1926, page 131.
(2) C. H. Miller: Discussion on paper by W. H. Todd: "The Syndrome of Chronic Toxic Cholecystitis", *The British Medical Journal*, February 13, 1932, page 286.
(3) W. Boyd: "Surgical Pathology", 1929, page 415.

Reports of Cases.

LYMPHOEPITHELIOMA.

By J. V. DUHIG, M.B.

(*From the Pathological Department, Brisbane Hospital, Brisbane.*)

THE following case is reported of a tumour of uncertain type from the nasopharynx. I have called it a lymphoepithelioma, not in full certainty that the diagnosis is correct, but because the clinical and histological data seem to fit the growth most easily into this classification. These data will follow, but it is first well, I think, to indicate what is meant by the term, which probably is unfamiliar to most nasal surgeons and possibly to some pathologists. I have no real first-hand knowledge of this form of growth and rely on the following extract from a paper by Ewing(1) to indicate the type we are dealing with. In the summary to his paper Ewing says:

> The present available data seem to call for the recognition of a particular form of epidermoid carcinoma occurring especially in the nasopharynx and designated by Regaud and Schmincke as lymphoepithelioma. The tumours . . . occur at all ages, frequently in young subjects, grow slowly (and) tend to produce early metastases in the neck . . . . They exhibit a marked primary response to radiation. The diagnosis must be based on the structure, which shows sheets of pale staining epithelial cells, often in syncytia, and infiltrated with many lymphocytes, both in the primary tumour and in metastases. . . .

The following are the clinical and histological data of a tumour which I believe to be of this type.

History and Clinical Course.

Miss R.M., a schoolgirl, thirteen years of age, was admitted to the Brisbane Hospital complaining of constant watery discharge from the nose and that blood always came away when the nose was blown. This had gone on for some time. She had had tonsillectomy two months before.

The child had an "adenoid facies" and the right tonsil was still present. The tonsillar glands were enlarged and there were hard fixed enlarged glands beneath and behind the sterno-mastoid muscle on either side. Three days later, on March 23, 1931, adenoidectomy was done. The surgeon, being suspicious of the density of the material recovered, submitted it for histological examination. I reported it to be a lymphoepithelioma of Regaud; my reasons for so doing I shall discuss later.

A blood count showed a fair degree of anæmia; there was no reaction to the Wassermann test, and radiographs of the sinuses and chest revealed no abnormality about this time. On April 24, 1931, "distance" radium was applied to the neck for seven days. The patient was discharged from hospital on May 1, 1931. She was readmitted to hospital on September 2, 1931, because of recurrence of the growth in the post-nasal space, "bulging of pharynx by post-nasal growth". On September 3, 1931, radium was buried in the growth. It was left in position for six days. This treatment was evidently successful, since there has been no recurrence to date.

On November 18, 1931, she was readmitted to hospital because of the recurrence of enlargement of the cervical glands, which had previously subsided after the radium treatment. Next week the glands on both sides of the neck were removed surgically, and one, the "tonsillar", sent for section. This contained deposits exactly similar to the original growth. The girl was discharged from hospital on December 10, 1931.

She was readmitted on January 5, 1932, because of the presence of a small "shotty" gland on the posterior of the sterno-mastoid muscle about its middle. The surgeon would not touch it, so "distance" radium was applied for six days. When she was last seen on February 23, 1932, the glands in the neck had gone but for a small one high up behind the angle of the jaw, probably missed by the slipping of the radium collar downwards. The girl's general condition is very greatly improved on what it was before treatment.

Description of the Tumour.

The original growth found in the post-nasal space consisted of large sheets of polygonal pale cells in a stroma consisting of lymphoid tissue of varying density lying itself in a very fine fibrillary mesh of reticulum. Towards the centre of the more solid parts of the tumour there was, of course, no stroma at all, the cell sheets being huge broad masses, infiltrating the stroma in solid mass formation, strongly reminiscent of the mode of invasion by certain very cellular types of epidermoid carcinoma. The outlying smaller sheets of tumour cells gave the appearance in section seen in Figure I. Higher magnifications (Figures II and III) show broad masses of cells, epithelioid in character, pale, polygonal in shape, when the cell outline is clear, but usually indistinct in outline, and for the most part syncytial. The nuclei are large, stain generally well, and contain one or more dark nucleoli. These syncytial sheets are infiltrated, sometimes heavily, with lymphoid cells, and they lie in intimate contact with vascular spaces of a primitive type, the tumour cells sometimes being actually the wall of the vessel. Metastasis in these conditions is easily conceivable. The nature of the type cell is not immediately apparent. Relying solely on experience, I would exclude any other origin than stratified epithelium for these cells. Figure I does not fairly represent the stained preparation, which has not given me any other impression than that the growth is derived from epithelium. And I think the most common-sense view is that the tumour cells are undifferentiated stratified epithelial cells derived from the transitional epithelium known to occur in the site of the growth. That the cell is to some degree undifferentiated is supported by its radio-sensitivity, definitely proved in this case.

Ewing(1) figures several representatives of this type of tumour, from his own collection and from that of others. My Figure II seems to me to resemble very closely that pictured by Jovin and reproduced by Ewing (Figure V in Ewing's paper).

Discussion.

Lymphoepithelioma is a tumour, first described apparently under that name by Regaud, occurring in the nasopharynx or neighbouring parts, of peculiar, rather indeterminate structure, very radio-sensitive and prone to produce early metastasis, while, particularly, the parent growth is still unsuspected. Indeed, the enlargement of cervical lymph glands is sometimes the first sign of trouble. Ewing,(2) in his book, long ago pointed out that a diagnosis of primary endothelioma of lymph nodes was perilous until all chance of an unsuspected primary growth was excluded.

Various tumours of epithelium, somewhat similar in structure, clinical course and radio-sensitivity, may occur about the base of the tongue, the tonsil and the nasopharynx, these being all really reducible to the common factor of derivation from a type of epithelium of a transitional character and a tendency, especially about the tongue, to anaplasia. So that we get the rather rapid, transitional, not rarely anaplastic, epidermoid carcinoma, relatively very radio-sensitive and relatively rapid in forming metastasis. And in particular we may find carcinoma of the nasopharynx frequently in young subjects, the first sign being constant nose-bleeding, and the first lump very often in the glands of the neck. Ewing says these tumours seem impossible to separate from lymphoepithelioma, which he thinks should be recognized as a particular form of carcinoma. This tumour grows in tissue

overlying lymphoid tissue, and the participation of the lymphoid cells seems to be an essential part of its structure, since their appearance in metastases would be hard to account for on any other basis.

The outlook for the patient who is the subject of this communication is, in spite of the improved local and cervical glandular condition, very bad. The implications of the structure of the growth (Figures II and III) are too obvious to be missed. The growth is notoriously radiosensitive when access is possible, but metastasis to a distance is early, and, though these secondaries are of slow evolution, they are in the long run fatal. For a review of the literature and an adequate discussion on this type of growth readers are referred to Ewing's valuable paper, and those unable to get it, to an editorial in THE MEDICAL JOURNAL OF AUSTRALIA.[3]

Acknowledgement.

I am deeply indebted to Dr. Culpin and Dr. Wassell for access to the clinical notes and for permission to publish the case.

References.

(1) J. Ewing: "Lymphoepithelioma", *American Journal of Pathology*, Volume V, Number 2, March, 1929, page 99.
(2) J. Ewing: "Neoplastic Diseases", Third Edition, page 368.
(3) Editorial Article: "Endothelioma and Lympho-Epithelioma", THE MEDICAL JOURNAL OF AUSTRALIA, August 17, 1929, page 235.

PULMONARY TUBERCULOSIS TREATED BY ARTIFICIAL PNEUMOTHORAX.[1]

By A. J. COLLINS, D.S.O., M.C., M.B., Ch.M.,
Honorary Assistant Physician, Royal Prince Alfred Hospital, Sydney.

THE following reports of cases are published in order to illustrate the successful treatment of pulmonary tuberculosis by means of artificial pneumothorax. This treatment has been carried out in connexion with the Anti-Tuberculosis Dispensary of the Royal Prince Alfred Hospital.

Now it is recognized by the medical staff of the dispensary that treatment by artificially created pneumothorax should not replace, but should supplement, the routine hygienic measures employed in the treatment of patients suffering from pulmonary tuberculosis. It is our practice, therefore, to cooperate with the various sanatoria within New South Wales, in order to secure, if necessary, the transfer of our patients to these institutions and to the climates considered most suitable. Where it has been thought desirable to create a pneumothorax in a patient, the lung is caused to collapse in this hospital. The patient is then transferred to whatever sanatorium appears best suited. The refills may be continued there, or the patient may return to our dispensary for that purpose at the required intervals. There remain, however, some patients who refuse to leave the city. Male patients may be obliged to continue working, and female patients may feel bound to continue their domestic duties. The patients whom I propose to discuss belong to this class. They have had no treatment apart from that of artificially produced pneumothorax, and have remained in the city during the whole course of treatment.

It has been my custom to recommend this treatment in the following classes of patients.

1. Those who do not show definite response to routine treatment within a period varying from six to twelve weeks.
2. Those with marked toxæmia.
3. Those who have repeated hæmoptyses.
4. Those whose disease is long standing and whose sputum persistently contains tubercle bacilli.

[1] Read at the second annual reunion of the Residents' and Ex-Residents' Association, Royal Prince Alfred Hospital, Sydney, October, 1931.

If, in a patient belonging to one of these four classes, it be found that the disease is unilateral, or for the most part confined to one lung, then the treatment under discussion is instituted. These remarks, of course, do not apply to cases in which partial pneumothorax is for various reasons established and maintained, but to those in which the affected lung is completely collapsed.

Case I.

P.H., a female, aged twenty-three years, married, first reported on August 27, 1929, stating that two weeks previously she had had three hæmoptyses, each of about 0·28 litre (half a pint), during a period of thirty-six hours. She had had a cough and slightly blood-stained sputum for about a week prior to that and ever since. She had lost 3·6 kilograms (eight pounds) in weight during the previous week. She had been short-winded for about four months. She had had nausea early in the morning for about six years. Her father had recently been discovered to have chronic phthisis of long duration.

Physical examination showed her to be rather pale. Expansion and resonance to percussion were diminished over the left upper lobe. The breath sounds were very harsh over this area. Crepitations were heard in the left supraspinous region. The X ray report read as follows.

> Very extensive tuberculosis of the left upper lobe fairly recent in character. There also appears to be definite extension towards both bases. There is also a slight lesion underlying the first right intercostal space. The condition of the bases appears to be more recent than at the apices.

She could provide no sputum for examination. The von Pirquet reaction was positive. A diagnosis of subacute pulmonary tuberculosis was made. Consideration of the X ray film side by side with her clinical condition led to the conclusion that there was practically no disease on the right side and that pneumothorax treatment would give her her best chance of recovery. As her home was at Punchbowl, in good surroundings, sanatorium treatment was not insisted upon. In September, 1929, artificial pneumothorax treatment was commenced; the left lung collapsed readily, and was kept collapsed until September 30, 1930, when, owing to a change of resident medical officers, her lung was unintentionally allowed to expand. In the meantime her general condition had improved in a marvellous manner and her weight was at such a consistently higher level than when treatment was commenced that some hesitation was felt regarding the necessity for recommencing treatment. Accordingly an X ray film was taken on September 29, 1930, which, to my great surprise, showed that the tuberculous disease had almost completely resolved.

The object of reporting this case is to indicate the immense amount of benefit which may follow twelve months' treatment by induction of artificial pneumothorax.

An X ray film taken twelve months later (September, 1931) showed no evidence of pulmonary tuberculosis.

Case II.

E.H., a female, aged twenty-nine years, married, was first seen by me in consultation with Dr. Hearne, of Arncliffe, on September 18, 1929. She had had a cough for twelve months with a small amount of muco-purulent sputum. She had had a small hæmoptysis a few months previously and a large hæmoptysis the day before I saw her. Tubercle bacilli were found in her sputum. X ray examination of her lungs revealed well marked tuberculous mottling with cavitation in the left upper lobe. Clinical examination revealed definite evidence of active disease in the left upper lobe. I instituted artificial pneumothorax treatment at once, as the patient, for domestic reasons, was unable to leave her home. The treatment was maintained for two years. During this time the patient's weight increased from 50·4 kilograms (eight stone) to a maximum of 65·2 kilograms (ten stone five pounds) on August 19, 1930. The last injection of air was made on August 15, 1931. Her weight at that time was 62·5 kilograms (nine stone thirteen pounds). The

lung was then allowed to expand. An X ray report, dated September 16, 1931, reads as follows.

> Both lungs appear to be completely expanded. There is localized fibrosis in the left upper lobe, probably due to a quiescent tuberculous lesion.

She still has a slight cough, with a small amount of sputum. There is no evidence of active disease in either lung. I propose to keep her under observation.

(An X ray film taken six months later, in February, 1932, reveals diminution in the extent of the localized fibrosis in the left upper lobe.)

Case III.

F.G., a female, aged nineteen years, was seen on January 9, 1931, and gave a history of having had a "nervous breakdown" two years previously, when she had felt very irritable and tired. She had had a cough for two months, with but little sputum. X ray examination on January 12, 1931, revealed mottling of the left upper lobe, recent and active in type. There was well marked cavitation in the subapical region. In the right lung there was no change.

The intradermal reaction with old tuberculin was strongly positive. Her sputum contained tubercle bacilli on February 20, 1931, for the first time. This was shortly after the lung had collapsed. The percussion note was dull and the breath sounds were harsh, and crepitations could be heard over the left upper lobe. She was febrile. Artificial pneumothorax was induced on February 13, 1931. The condition of collapse has been maintained ever since. Her temperature quickly became normal. Her weight increased from 43·6 kilograms (six stone thirteen pounds) to 53·1 kilograms (eight stone six pounds) between January and September. She has continued to live at Ryde, Sydney, throughout the treatment.

Case IV.

J.O'C., a male, aged thirty-seven years, had a large hæmoptysis on August 18, 1931, which continued for three days. Prior to this he had been quite well, except for slight dyspnœa which he had experienced on climbing hills during the previous six months. He was 81·4 kilograms (twelve stone thirteen pounds) in weight. His physique was good. The resonance to percussion was defective and expansion was restricted all over the right lung, but there were no abnormal accompaniments to the breath sounds. X ray examination revealed mottling throughout the whole of the right lung, with consolidation at the apex, interlobar pleurisy on the right side, and early cavitation at the right apex. There was also a little mottling in the left subapical area. A very large hæmoptysis in proportion to the extent of his disease, combined with his definite refusal to relinquish work, induced me to commence treatment by artificial pneumothorax forthwith. This has been maintained ever since. He is able to carry on his work as a grocer without any difficulty and has no symptoms apart from shortness of breath on exertion. The final result in this case will be reported later.

Comment.

In Cases I and II apparent cures have been obtained after treatment lasting one year and two years respectively. It is generally held that artificial pneumothorax treatment should be persisted in over a period lasting for two to five years. I have not heard of a cure after twelve months' treatment only. It is admitted that apical tuberculous lesions are eminently curable, and that many are cured without treatment of any kind. It would not be likely, however, that natural cure would occur in such extensive lesions as those found in Cases I and II.

The second point I wish to make is with reference to the X ray appearances in healed tuberculous lesions. Many cases have come under my notice in which all radiographic evidence of tuberculosis has disappeared from patients who have been apparently cured of pulmonary tuberculosis. Such is the case with my first patient of this series. On the other hand, one frequently finds small apical opacities, either discrete or confluent, in patients from whom all signs of active disease have disappeared. We are frequently told by the radiologist that such appearances are due to "chronic tuberculosis, probably healed". I am very doubtful whether the disease is ever healed in such cases. I am not, of course, referring to areas of definite calcification. I certainly feel that if the opacity is of any extent it should be regarded as due to active disease, even in the absence of definite signs of activity.

Serial X ray examination is our only guide to progress under conditions of this nature. For instance, in Case II the X ray appearance of the reexpanded lung is that which we have hitherto regarded as due to healed tuberculosis. When we see what healed tubrculosis really looks like (for example, Case I), we must consider that the lesion in Case II is probably still active. This view is confirmed by an X ray film taken three months later, which showed further diminution in the extent of the opacity.

POLIOMYELITIS.

By S. GOLDBERG, M.B., Ch.M. (Sydney),
Griffith, New South Wales.

THE patient, G.C., a male, aged five years, was first seen on April 24, when he complained of a severe headache. His mother stated that he had been very feverish the night before and complained of general malaise. The examination, however, showed the temperature to be normal, the pupil reflexes active and equal, the knee jerks active and equal; no head retraction, and no paresis. The spine sign, as shown by the ability of the patient to kiss his knees, was also normal. Nothing else was detected in the physical examination, so I sent the patient home, telling the mother to bring him back if he became sick again. Two days later the patient returned; but this time the temperature was 38·5° C. (101·4° F.), the pulse rate 128, and the respiration rate 30 per minute. Severe headache, drowsiness, irritability were marked symptoms. The spine sign was very pronounced, the patient being quite unable to flex his body.

The reflexes were normal and no paresis or vomiting was present. The symptoms were so suspicious that I communicated with the medical officer in charge of the human convalescent serum for the treatment of poliomyelitis, and a lymphocyte count of the spinal fluid was carried out. The fluid was under normal tension, and the count was also quite normal. No serum was administered. The following day the patient's general condition was worse. His temperature had risen to 38·6° C. (101·6° F.), his pulse rate was 128, and his respiration rate 28 per minute. The spine sign was very pronounced, the knee jerks on both sides were absent, and there was paralysis in both legs. Even if the lower extremities were raised, the patient could not maintain the position, and the limbs flopped on the bed.

After much difficulty, owing to the fact that the cerebrospinal fluid cell count had been normal, I obtained the serum and injected twenty cubic centimetres intrathecally and the balance intramuscularly. Twelve hours later the temperature was 37·4° C. (99·4° F.), the pulse rate was 108, and the respiration rate 24 per minute, and, although the patient could not move his legs, he could maintain their position when they were raised.

The paralysis disappeared completely in thirty-six hours, and though the temperature and pulse rate did not subside to normal till the seventh and eighth days respectively, the spine sign disappeared in four days.

Comment.

In view of the absence of both vomiting and an increased lymphocyte count, this case is evidently very unusual; but the fact that the paralysis disappeared after the administration of the serum will, I think, prove that it was one of true infantile paralysis.

Reviews.

THE NURSING OF CHILDREN.

"NOTES ON CHILDREN'S NURSING," by Marguerite Erxleben, is a most complete set of directions on the management of sick children.[1] The book deals minutely with every aspect of the work in the children's department of a large public hospital. The information is well arranged and easy to follow, though the jerky diction would be irritating to most readers. The detailed descriptions of treatment and taking of tests and specimens would be most useful to the student nurse. The sample diet list on page 113 is one that might well be adopted by all hospitals. The illustrations are too small and are poorly reproduced; there are many blank pages, which are quite unnecessary. Names such as "buttocks paste" and "*liquor antisepticum*" are used without an explanation of the nature of the substances to which they are applied, hence remarks concerning them are useless to the great majority of readers. The artificial foods recommended are little used in Australia.

However, despite these slight blemishes, this book may be warmly commended to all student nurses. They will find in it orderly and complete descriptions of every aspect of children's nursing. It should be a handy book of reference for the trained nurse; as, if she possessed it, she would never have to ask a doctor what he required for a "tray" for any procedure.

VARICOSE VEINS AND VARICOCELE.

"THE RATIONAL TREATMENT OF VARICOSE VEINS AND VARICOCELE" is the apt title of a small volume by W. Turner Warwick.[2] The author has been at no small pains to provide a sound foundation for the general treatment of these conditions and for his own methods in particular.

The book commences with an excellent chapter, partly historical, on the ætiology of varicose veins. The historical portion is treated in a concise, orderly and thorough manner, and leads up to a discussion of the anatomical principles involved in the formation of varices. This section is illustrated by some excellent radiographs of injected specimens demonstrating the connexion between the superficial and deep veins.

The chapters on treatment commence with a discussion of the various operative methods, past and present. The relative value of each is accurately assessed. The injection treatment is dealt with in a very logical manner, commencing with the possible dangers and leading on to a thorough description of the aims and technique. Contra-indications are enumerated, the after-treatment is efficiently described, and the various reactions to be expected are discussed in a very concise and thorough manner. An excellent chapter is added on the treatment of varicose ulcer and œdema. A short chapter is devoted to the injection treatment of piles; and a thorough discussion of the ætiology and treatment of varicocele is provided. The volume concludes with an appendix devoted to suggestions for the obliterative treatment of cystic swellings lined by endothelium.

This little book ably fulfils the ambition of the author in its preparation. Seldom are found so little padding and so much valuable information in so small a compass. The book is of distinct value not only to the student and general practitioner, but also to the surgical specialist. There are very few questions connected with the subjects treated that are left unanswered in its pages.

[1] "Notes on Children's Nursing", by M. E. Erxleben, R.N., B.S.; 1931. Philadelphia: F. A. Davis Company. Royal 8vo., pp. 242, with 43 engravings.

[2] "The Rational Treatment of Varicose Veins and Varicocele, with Notes on the Application of the Obliterative Method of Treatment to Other Conditions", by W. T. Warwick, M.A., M.B., F.R.C.S.; 1931. London: Faber and Faber. Crown 8vo., pp. 187. Price: 5s. net.

OBSERVATION IN CLINICAL SURGERY.

THE book on physical signs in clinical surgery, by Hamilton Bailey, comes as a most welcome and timely reminder of the fundamental principles of surgical diagnosis.[1]

Not only by every student should this book be read and re-read, but also by every clinician; for even if he fails to find it actually instructive, he cannot fail to find it most enjoyable reading.

True, indeed, the author has not discovered anything new or anything that should not already be known, but he has collected ably and displayed attractively all those things in clinical surgery that are so apt to be forgotten.

Mr. Hamilton Bailey takes an obvious delight in observing and demonstrating the physical signs of surgery, and the magnificent series of plain and coloured plates used to illustrate every point is in itself an atlas of no small value.

The letterpress chiefly explanatory of the plates is concise, illuminating and often amusing. The fact that the author frequently leaves his main theme to give hints of prognosis and treatment, is no drawback to the unity of the whole work. He has a great love for aphorisms, of which there are many old and new throughout the book.

This whole work is a splendid apologia for the value of sight, sound, touch and smell, unassisted by more technical diagnostic methods.

There is no doubt that if all out-patient surgeons became devotees of Mr. Hamilton Bailey's thorough methods, the overtaxed X ray and pathological laboratories of our public hospitals would be greatly relieved of their burden.

GYNÆCOLOGY FOR NURSES.

MANY text books for nurses are more suited for students or for medical practitioners. However, the "Textbook of Gynæcology for Nurses", by Dr. Philip J. Reel, is extremely well balanced in the presentation of its subject matter.[2] The aspects of gynæcology concerned with anatomy, physiology and pathology, are not unduly stressed at the expense of the methods of the examination, operation and after-treatment, with which the nurses are more closely concerned. The general information on gynæcological subjects is well up to date, covering in due perspective the Aschheim-Zondek test and cancer propaganda, and the details in respect to nursing technique are excellent. There are few criticisms to offer. Perhaps the very short section on disorders of menstruation could be elaborated and the operative and post-operative treatment in specific cases, for example, complete tear of the perineum, could be more closely related. The illustration of the insufflation apparatus shows an oxygen cylinder, though we are accustomed to using carbon dioxide. This text book is not unduly long; it is readable, and is very well illustrated. In addition there is a useful set of review questions at the end of each chapter. The book should prove very useful for nurses both training and qualified.

[1] "Demonstrations of Physical Signs in Clinical Surgery", by H. Bailey, F.R.C.S.; Third Edition; 1931. Bristol: John Wright and Sons. Royal 8vo., pp. 297, with 318 illustrations, some of which are in colour. Price: 21s. net.

[2] "Textbook of Gynecology for Nurses", by P. J. Reel, M.D., F.A.C.S.; 1932. Philadelphia: F. A. Davis Company. Royal 8vo., pp. 282, with 81 engravings. Price: $2.50 net.

The Medical Journal of Australia

SATURDAY, JULY 16, 1932.

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Authors who are not accustomed to preparing drawings or photographic prints for reproduction, are invited to seek the advice of the Editor.

THE GROWTH OF KNOWLEDGE.

THE dawn of every day sees some advance in human knowledge. Yet how many people pause long enough in their hurry-scurry through life to consider the significance and the value of any such advance and its possible influence on human progress?

In the course of many centuries man has accumulated a vast store of knowledge; but he is apt to overlook the cost of its acquisition, and he seldom troubles to question whether he has forgotten much that may have been of greater importance than much that he has learnt. There has been a cost in many things that must be weighed against the benefits brought to human kind by increased knowledge. Consideration of the purely material cost may be set aside as of no great importance. But what of the price that has been paid in human life and suffering? Can it be truly said that the knowledge gained has always been worth the sacrifice? There have been some foolhardy quests in which little has been gained and much that could have been utilized in a more worthy cause has been lost. This statement cannot be made of medical knowledge; the lives of the many brave men and women lost in the cause of medical science have not been sacrificed in vain; they have been lost that suffering may be alleviated and disease suppressed; and the benefits that have accrued to mankind outweigh the greatest and the least of them. It may also be said that whatever the cost of medical knowledge, it can never be so high as the price paid for ignorance.

It is the way of youth to scorn or merely to tolerate age, and in these days of young ideas and nascent methods, it is the way of people to discard the methods and learning of ancient years and to forget much that their forefathers cherished. Doubtless much could be forgotten without any loss to humanity; but there is danger in neglecting or scorning the learning of the past. Nowhere is this danger more apparent than in medicine. The physicians and surgeons of old were forced to rely on their senses, their powers of observation and discrimination, their critical faculties and their judgement. Thus their wits were sharpened, and they developed a clearness of perception that is rare nowadays and is perhaps often regarded as unnecessary in a world of X rays, electrocardiographs, test tubes and reagents. Of course they made mistakes, as people make mistakes today despite assistance from workshop and laboratory; their conclusions were often wrong, because much of the data required could have been obtained only by the employment of methods or apparatus that had not yet been devised. The modern medical practitioner has gained much and he is liable often to prove his ancestor in the wrong; but he deceives himself when he thinks he can afford to undervalue the knowledge that his ancestor bequeathed to him.

Increase in knowledge is not always an unmixed blessing. Payment for it sometimes continues after it has been obtained. It may have a considerable influence for bad as well as for good on the habits and customs of men, on their work and play, and on their health. Knowledge applied to mechanical invention may lead to too great reliance on the machine, hence loss of initiative and method. Knowledge applied to the over-preparation of foods brings deficiency diseases in its train; thus, strangely, newer knowledge is required to combat the effects of knowledge misused. Knowledge may even be employed for unworthy ends and be a dangerous weapon.

It is good for man's conceit that he should be able to look back on the history of his progress, to see with his mind's eye the ancient civilizations, to travel on the wings of thought through the centuries of darkness, to estimate what he has gained and what he has lost. The ancients had knowledge of many things of which modern man knows nothing, and many of today's discoveries are things that were forgotten yesterday. It has been said that there is nothing new under the sun; yet, paradoxically, there is no one thing about which nothing new can be learnt.

In a review of the progress of human knowledge, man can read of plot and counter plot, joy and sorrow, laughter and tears and song, blended into a story that is all the more fascinating in that it can never be complete. The quest for knowledge will continue. Much will be learnt and much forgotten. Achievements will be greater and the cost less if man will try to learn the lessons from the story of the past.

Current Comment.

THE TREATMENT OF OBESITY.

UNDUE storage of fat in certain individuals seems almost inevitable. Increasing years, the decrescence of bodily activity, the growing predominance of anabolic over katabolic processes, and the attainment of greater ease in life, all play their part. But in addition to these factors, which are common to most persons, there is some other influence at work in some races, families and individuals, that determines greater fat storage. Whatever this influence may be, whether it is hormonic in nature, as seems likely, or whether it depends upon some obscure quality of the cellular composition of the body, the reserve power to burn excess calories is impaired or lost, and such excess, instead of being utilized in the metabolic machine, takes visible and ponderable shape as adipose tissue. The means by which this frequently unwelcome process may be reversed is not only of importance to the medical profession, but also of great interest to the lay public. This is evidenced every day in the advertising columns of the Press; indeed, even the current vocabulary of the day proclaims it by the special significance which now invests the word "reduce".

It is, of course, well known that the only means available of treating obesity are restriction in the intake of calories and increase in the output of energy. The latter is often difficult and unsatisfactory. To increase the amount of bodily exercise taken is often helpful, but it is a method limited in application, as the extra calories dealt with can only be small in amount. The same end may be attained by quickening the metabolic rate by administering thyreoid gland substance; that there are definite and obvious limitations here too needs only to be mentioned.

A study of the comparative effects of dieting and the administration of thyreoid extract has been published from the Royal Infirmary, Edinburgh, by D. M. Lyon and D. M. Dunlop.[1] They have used diets varying in caloric value from 2,700 to 800 calories, but have relied in the main upon a standard dietary of 1,000 calories. This has been given for part of the test time at least to all their patients, and for purposes of comparison, has been used both with and without thyreoid extract. This diet is made up of 100 grammes of carbohydrate, 60 grammes of protein, and 40 grammes of fat. Lyon and Dunlop found no trouble with the use of low dietary scales. The patients soon lost any troublesome sense of apparent weakness or hunger; this accords well with the experience of numerous observers. No true exhaustion was observed, and ketones were very rarely found in the urine, except in the urine of patients taking very restricted amounts of carbohydrate. All their patients lost weight, whether they suffered from a definite endocrine insufficiency or not. Weight loss occurred in a fairly uniform fashion. Some variation from day to day was noticed; this was particularly seen in females near the time of the menstrual period, in whom the oncoming menstruation retarded the process for a few days, and even sometimes caused a temporary increase in weight. As has been frequently observed, it was found that the rate at which weight was lost slowed down after some time, and in a number of cases ceased altogether, even though the diet was unaltered. An instance of this is found in the record of one patient who, taking a diet of 1,200 calories, lost weight in the first week at the rate of 457 grammes a day, during the second week 214 grammes, and during the third week only 157 grammes. The cause of this is apparently to be sought in changes in water loss, stabilization in the body needs at a different level, and alteration in metabolic rate.

As regards the actual foodstuffs given, it was found that conclusions are not easy to draw, individual variations being considerable; but the greatest weight loss was obtained when diets of low carbohydrate value were used. Here it may be recalled that the actual variety of carbohydrate used may be of importance. Some years ago Gordon and Stanley brought forward evidence as to the value of dextrose in the treatment of obesity. They gave 100 to 400 calories in this form in a diet with a total caloric value of 1,200 to 1,400, and claimed that the rapid absorption of sugar favoured a more

[1] *The Quarterly Journal of Medicine*, April, 1932.

prompt utilization than is obtained with the more slowly absorbed starches.

The effect of thyreoid extract was also investigated by Lyon and Dunlop. As would be expected, the metabolic rate rose in proportion to the dose given. As a rule 0·18 gramme (three grains) daily was the initial dose; this was increased to 0·36 or 0·54 gramme (six or nine grains), and in a few cases to 0·72 or 0·9 gramme, or even 1·08 grammes for a time. It was found that in order to double the weight loss caused by the diet of 1,000 calories, a daily dose of 0·54 gramme of thyreoid extract was required. Some patients, after discontinuing the thyreoid extract, began to regain weight; others could maintain the lower weight level by diet alone.

A summary of the effect of the diet is as follows. In the first few days there is a rapid loss of weight, chiefly due to water loss. Then a period ensues in which 80% of the weight loss is due to disappearance of fat and the remainder to loss of water. Finally, the weight loss slows its rate as metabolism adjusts itself to the reduced level of food intake. Any loss of body protein observed was insignificant, and all the patients developed an enhanced capacity to utilize protein. The effect of thyreoid extract was to increase the water loss, which rose to 40% of the total loss, the remainder being due to loss of fat.

Such a study as this helps in the gaining of more accurate ideas on a subject that is difficult and essentially inexact under the loose conditions of ordinary clinical observation. There are so many variables, that work cannot be done to formula, except with the most rigorous controls. It is useful to have some idea of what may be expected when attempts are made to amend the faulty working of the human thermal machine.

THE GALACTOSE LIVER EFFICIENCY TEST.

THE margin of safety allowed by Nature in all bodily function is so ample that the efficiency of an organ has to be lowered very considerably before the damage is demonstrable by chemical test. This is well known in the case of kidney function. Still more difficult is the problem of the liver, with its manifold functions and high capacity for regeneration. As regards the latter, the laboratory animal, after being deprived of a considerable fraction of its hepatic tissue, is actually able to regenerate new cells almost up to a normal level, and the human cirrhotic liver puts forth gallant efforts in the same direction. These considerations, however, do not deter investigators from seeking some test that will disclose an incapacity, even as regards one function only of this organ. Of the tests used to assess the carbohydrate metabolic function, the lævulose and galactose tests are best known. Against the former it has been urged that lævulose may be converted to dextrose in the stomach, thus invalidating the findings.

H. Shay and E. Schloss, in a recent article, advance further evidence in favour of the galactose test, and with an eye to the practical, they suggest that it may be used as a means of differentiation between the obstructive and toxic groups of painless jaundice.[1] This differentiation may be aided by the use of the Van den Bergh test, as is well known, but if the authors' claim is borne out by further experience, the galactose test should be a welcome help in a difficult type of case.

The most attractive feature of the test is its simplicity; it does not involve estimation of the blood sugar content, but merely the amount of sugar in the urine. It is found that a normal subject excretes from nil to three grammes of galactose during a period of five hours after the ingestion of forty grammes of this sugar, and Shay and Schloss find that when an amount greater than three grammes is passed, the assumption may be made that the liver cells have suffered damage, and that therefore the jaundice is toxic or infectious, and not obstructive. They point out that slight degrees of damage do not deplete the liver reserve, and therefore do not affect the metabolism of galactose. Lesions sufficiently chronic to allow time for cell regeneration also cause no alteration in the liver's efficiency as determined by this test.

All that is necessary to carry out the test as described by Shay and Schloss is to give the patient 40 grammes of galactose in 500 cubic centimetres of water after an overnight fast. Nothing but water is allowed for five hours, and during that time the urine is collected hourly and measured. A mixed sample is then tested by the Benedict quantitative method. If the patient is a diabetic, after this is done the urine is fermented to remove dextrose, and retested.

High readings point to hepatic cell damage, and a low figure indicates a jaundice of the obstructive type. As would be expected, difficulties in interpretation arise when the figure obtained is either just above or below the recognized normal limit; but even then the result may help to a decision.

It would seem that this test has the drawback that it introduces two variables: the capacity for the individual to absorb the test sugar, and the renal threshold for the sugar when it passes through the renal circulation. Nevertheless, it may prove worthy of more extended use; for the problem of the cause of jaundice is apt to be so difficult that any real help would be eagerly sought by the clinician. The question to be decided is often whether operation should be performed or not, and this is a decidedly important decision to make if the patient is jaundiced. If a definite opinion can be given as to the cause of any painless jaundice, it is, of course, less difficult to give a prognosis, and the solving of this question is sometimes a Gordian knot that may only be cut by some surgical Alexander.

[1] *The Journal of the American Medical Association*, April 23, 1932.

Abstracts from Current Medical Literature.

OPHTHALMOLOGY.

Epithelial Dystrophy of the Cornea.

S. R. GIFFORD (*Archives of Ophthalmology*, January, 1932) describes a mild form of dystrophy of the cornea and contrasts it with the much rarer typical condition described by Fuchs in 1910. It consists of an œdema of the corneal epithelium with the formation of numerous blebs of varying size associated with punctate greyish opacities in the epithelium and greyish lines and dots in the parenchyma. The vision is reduced to $^6/_{60}$ or less. The patients were over forty-eight years of age, and nine women were affected, as against four men. In advanced glaucoma the cornea shows similar changes, but in dystrophy the ocular tension is abnormally low. The author reports twenty-three cases of the mild form of dystrophy and three of the typical variety. The usual history in the mild form is a "scratchy" feeling in the eye with diminution in vision, one eye usually being more affected than the other. The decrease in vision is seldom extreme, and in milder cases there may be no decrease. Most of the patients are middle-aged or older. Fifteen in the author's series were women and seven were men. Ophthalmoscopic examination with a dilated pupil and a spherical lens of +10 diopters will often show a number of fine black dots. Sometimes no opacities can be seen. There is often present some chronic conjunctivitis and blepharitis. Examination with the slit-lamp after the instillation of "Fluorescin" reveals stained areas, varying in number from five or six to several hundred. Between such areas tiny droplets are present, representing œdema of the epithelium. The droplets may collect and form tiny blebs. In some cases fine white dots in the epithelium, which do not stain, are seen. An almost constant finding is an insensibility of the cornea. Probably other observers have described this condition and called it by other names. Bartels called it *keratitis superficialis punctata*. The flame-shaped epithelial keratitis of Holmes Spicer may represent a form of dystrophy. Treatment is discouraging, but in the mild form the use of ethyl-morphine hydrochloride ("Dionine") is apparently of great value. A 2·5% to 5% solution of this drug in a 1 in 5,000 solution of mercuric cyanide was used in most cases, a drop being instilled three or four times a day, with good results. Another drug that seems of value is "Phenocain". It was used with ethylmorphine hydrochloride or alone.

The Effects of Adrenalin on the Intraocular Pressure.

W. S. AND P. M. DUKE ELDER AND J. C. COLLE (*The British Journal of Ophthalmology*, February, 1932) have carried out an investigation on the action of adrenalin on intraocular pressure in intact dogs. The action of adrenalin upon the eye itself, uncomplicated by the effects on the general circulation, is fourfold: first, in small doses it dilates the capillaries and raises the intraocular pressure; secondly, in large doses it constricts the arterioles and capillaries and lowers the pressure; thirdly, in any dose it constricts the plain muscle of the orbit and raises the pressure; and fourthly, it dilates the pupil. In the intact animal, when the situation is complicated by general vascular changes, the raised blood pressure tends to break through any arterial resistance which may be present, and causes a rise in intraocular pressure, unless the dosage is very high, when the local constriction of the arterioles may be sufficient to counterbalance this. The present investigation accounts for the variability in the action of adrenalin upon the pressure in the eye.

Operation for Pyramidal Cataract.

E. SELINGER (*Archives of Ophthalmology*, January, 1932) suggests the following procedure which he adopted in the extraction of a congenital pyramidal cataract in a boy of six years. The pupil was dilated with atropine, and ether anæsthesia was employed. A Ziegler knife was introduced from the temporal part of the limbus and the point inserted posterior to the opacity. The cataractous portion of the lens was completely undermined and freed from the underlying cortex. The knife was then withdrawn without the escape of aqueous humour. An incision, six to eight millimetres in length, was then made with a cataract knife along the upper part of the limbus. A curved, sharp-toothed forceps was then introduced and the opaque tissue grasped and removed.

Treatment of Corneal Opacities.

H. VASSILIADIS (*Revue Belge des Sciences Médicales*, October, 1931), while admitting a certain amount of spontaneous cure, claims good results from the application of ionium in the treatment of corneal opacities. He has carried out experiments on rabbits and observed better results in those treated with ionium than in the controls. Ionium is a heavy metal of some stable radio-activity, emitting α rays to the depth of one millimetre only. The product is employed in a pomade to allow prolonged contact with the cornea.

Electro-Endotherapy in Detachment of the Retina.

S. LARSSON (*Archives of Ophthalmology*, May, 1932) considers it unproved that retinal rupture is the cause of retinal detachment, as cases occur when the closest search fails to discover a hole. Credit is due to Gonin for drawing attention to the fact that closure of the hole, or rather the prevention of communication between the preretinal and subretinal spaces, must be considered of the utmost importance for a favourable operative result. Hence he considers it desirable that an adhesion should be striven for between the retina and the choroid of that area of the retina which seems to constitute a *locus minoris resistentiæ*. This part may be assumed to be the area within which the hole is located, or, when no hole is present, where the detachment becomes first in evidence. This area is generally the whole or part of the periphery of the retina. His method of operating may be described thus: The conjunctiva is detached at the corneo-scleral boundary and stripped off over an area corresponding to the extent of the retinal detachment. The conjunctiva is kept away from the operative field by sutures. The large indifferent electrode made of a lead plate is bandaged on to the leg over a gauze pad soaked in salt solution. The active electrode is a metallic ball, 0·66 millimetre in diameter, provided with a handle. An extremely weak current is used, too weak to give any reading on the ammeter. At several places, a few millimetres apart, the electrode is brought in full contact with the exposed sclera for five seconds at a time. It is applied at a distance of eight or nine millimetres from the limbus. The thermal effect on the sclera is evident as an opaque, dark-coloured, annular zone. Trephining of the sclera is then carried out with an Elliot trephine over the most dependent area of the detachment. The escaping fluid or vitreous humour is washed away with saline and the resected muscles and conjunctiva sutured. The patient is kept in bed, with both eyes bandaged, for a fortnight, and for a further eight or fourteen days without bandage. Atropine is applied as long as the eye is inflamed. In this operation no precise localization of the site of the hole is necessary. The author gives a detailed tabulation of forty cases, in 50% of which he claims a satisfactory result.

OTO-RHINO-LARYNGOLOGY.

Permanent Tracheostomy in Stenosis of the Larynx.

ST. CLAIR THOMSON (*The Journal of Laryngology and Otology*, December, 1931), in an article pointing out the value of a permanent tracheostomy in stenosis of the larynx, draws attention to the reasons for hesitation to perform the operation of tracheotomy when this operation would be of great advantage to the patient. He considers that many of the dangers attributed to the operation are imaginary, and opposes the opinion that the permanent opening of the trachea is a "disaster". The fear of causing bronchitis he regards as a fetish, and he does not believe that those operated upon are any more prone to develop catarrh than those who have not

undergone the operation. In support of his opinion the author gives a list of case histories which demonstrate that individuals compelled to wear a tracheotomy tube indefinitely can cycle, dance, play tennis or golf, indulge in winter sports, and marry and bear children.

Multiple Papillomata of the Œsophagus.

LOUIS GINSBURG (*Archives of Otolaryngology*, November, 1931) reports a case of multiple papillomata of the œsophagus. The rare occurrence of this condition is commented upon, and the author quotes Patterson as concluding that papillomata of the œsophagus, though rare, do occur, and if œsophageal symptoms were not treated without a diagnostic œsophagoscopy, more cases would be recorded. Papillomata of the œsophagus have a tendency to recur, and, therefore, are best dealt with by superficial removal with cupped forceps, repeated as often as may be necessary.

Allergy and Oto-Laryngology.

W. W. DUKE (*Archives of Otolaryngology*, November, 1931), in a summary of the bibliographic material available in the field of oto-laryngology, states that the literature of the years 1930 and 1931 is largely an elaboration of work initiated in previous years. He quotes Bullen's conclusion that tonsillectomy does not improve the nasal or pulmonary manifestations of allergy, although rare exceptions may occur, and that nasal or pulmonary manifestations of allergy are as likely to occur in a person whose tonsils have been removed, as in one who retains his tonsils.

The Drainage of Nasal Mucus.

ANDERSON HILDING (*Archives of Otolaryngology*, January, 1932) presents a report setting out the results obtained in a study of the nasal secretion of thirty-one persons. The technique consisted simply in dotting small drops of India ink on various portions of the nasal mucosa and observing and recording the direction and rate of flow. The nasal mucosa in the anterior portion of the nose, where it meets the inrushing inspired air, does not possess ciliary activity, as indicated by the movement of the overlying mucus. This inactive area lies in the anterior third of the nose and drains largely through the inferior and middle meatus. It is irregular in size and shape. It ordinarily includes the preturbinal region, the anterior ends of the inferior and middle turbinates, approximately the anterior one-fourth to one-third of the septum, and a narrow strip across the floor. The cells of the mucosa posterior to these areas exhibit active ciliary motion, which is greatest in the regions best protected from the flow of inspired air. The protective layer of mucus that overlies all these nasal surfaces is continuous with that in the pharynx and œsophagus. It moves, throughout its extent, very much in the manner of an intact membrane. It is motivated by ciliary action and traction. The nose may be said to have a new lining about once every ten minutes in the posterior two-thirds of its extent, and about once an hour in the anterior one-third. The drainage of secretion from the anterior inactive areas, where dust and bacteria lodge, is accomplished by traction and gravity. The course from the lateral wall is largely through the meatus. The motion is slow, requiring an hour or more for drainage. The drainage of the active areas is rapid, requiring from three to ten minutes only. The course in general is towards the naso-pharynx.

Laryngeal Carcinoma.

NORMAN PATTERSON (*The Journal of Laryngology and Otology*, February, 1932) advocates the "window" resection method in dealing with certain types of laryngeal carcinoma, and gives a clinical history of seven cases. In the majority of cases of intrinsic cancer of the larynx, thyreotomy is the operation of choice. The author describes a method of "window" resection in cases unsuitable for thyreotomy and in which total laryngectomy would be the only other treatment. Cases are described, together with the technique, which is a modification of Lack's. In the author's opinion the "window" method should be employed more often as an alternative to laryngectomy. The chief indications are: when the disease is limited to the anterior portion of the larynx but has crossed the middle line and involved both cords; when the tumour extends to the subglottic region and necessitates a partial resection of the cricoid cartilage. The essential principle is to uncover the tumour completely before attempt is made to remove it. Of six private patients, one has remained well nine years after the operation, while a number of others have survived longer than three years.

Acute Mastoiditis.

EUGENE C. SMITH (*The Laryngoscope*, February, 1932) reports three cases of acute mastoiditis developing after fracture of the base of the skull. All terminated fatally. Complications were found in all three. In one there was an extradural abscess and two brain abscesses, in another a subperiosteal abscess, perisinus abscess and sinus thrombosis, and in the third, erysipelas, subperiosteal abscess, perisinus abscess and extradural abscess. The cause of death was meningitis in two cases and septicæmia in the third. The author concludes that the mortality is high and complications frequent, due principally to the presence of infection with an open pathway to the meninges; the best chance of successful treatment would seem to be in early diagnosis and early surgical intervention. Acute mastoiditis is a delayed complication of basal fractures, and the signs and symptoms are similar to those of acute mastoiditis from other causes. Patients with head injuries should have an ear examination as soon after the time of the injury as possible, and the ears should be closely watched thereafter.

Pathological Changes in the Tonsils.

PAUL S. ROADS (*Archives of Otolaryngology*, April, 1932) comments upon the pathological changes in the tonsils and their relation to the usual indications for tonsillectomy. The tonsils most frequently excised are those affected with chronic hyperplastic tonsillitis and chronic lacunar tonsillitis (that is, larger and more obviously inflamed tonsils). If increased bacterial content and association with systemic disease may be taken as reliable criteria of harmful potentialities, small, smooth, fibrous tonsils and tonsillar stumps appear to be trouble-makers more often than the larger, redder ones. In many cases simple inspection reveals sufficient evidence for the removal of tonsils. In most cases, however, it is of little importance as compared with the evidence obtained by a carefully taken history, ordinary laboratory examinations, and painstaking physical examination. Team work by the physician and the oto-laryngologist is required. If the general examination reveals a systemic disease that is usually associated with focal infection, and other more obvious foci are not discovered, the tonsils should be regarded as probable sources of infection, regardless of their external appearance.

Malignant Disease of the Hypopharynx.

VON EICKEN (*The Journal of Laryngology and Otology*, April, 1932) discusses malignant disease of the hypopharynx and states that the prognosis in surgical intervention for carcinoma of the hypopharynx is unfavourable. Tumours limited to the lateral wall of the larynx have a relatively favourable outlook, as in some cases a total extirpation of the larynx may lead to a lasting cure. Conditions are much less favourable in the case of a carcinoma of the *sinus pyriformis* and the deeper part of the hypopharynx. He favours the application of radium to tumours of the hypopharynx, and describes the various ways in which this is carried out. Coutard's method of radiotherapy is referred to. The author is of the opinion that the method of applying radium after surgical exposure, as employed in his own clinic, and Coutard's work, open up a more hopeful outlook for the therapy of carcinoma of the hypopharynx.

Fixation Abscess.

GEORGES CANUYT (*The Journal of Laryngology and Otology*, April, 1932) discusses the history of fixation abscess and describes the technique which he now employs to bring it about. Fixation abscesses are useful chiefly in the treatment of septicæmia and pyæmia, and are employed by the author in cases of streptococcal septicæmia of aural origin.

British Medical Association News.

SCIENTIFIC.

A MEETING OF THE NEW SOUTH WALES BRANCH OF THE BRITISH MEDICAL ASSOCIATION was held at the Robert H. Todd Assembly Hall, British Medical Association House, 135, Macquarie Street, Sydney, on May 26, 1932, DR. A. J. GIBSON, the President, in the chair.

Complications of the Exanthemata.

DR. LAURENCE HUGHES read a paper entitled: "The Complications and Sequelæ of the Exanthemata" (see page 70).

DR. A. O. DAVY read a paper entitled: "Some Aspects of Sinusitis and Otitis Media in the Infectious Fevers" (see page 72).

DR. M. J. PLOMLEY thanked the readers of the papers and said that he was especially interested in nasal conditions which might predispose to or cause lung trouble in children. He was interested at the same time in what, at the Royal Alexandra Hospital for Children, was called "fibrosis" of the lung. It was only in the last few years that it had been realized that chronic sinus trouble was responsible for lung fibrosis or early bronchiectasis. The matter had been dealt with at the last congress. There was a special type of loose throaty cough typical and diagnostic of an early bronchiectasis secondary to sinus infection. It was possible to diagnose sinus trouble from this cough. For the origin of the infection it was necessary to look to the acute infectious diseases. Dr. Plomley asked other members to tell what had been their experience in the use of vaccines for treatment in such cases. He thought that vaccines were of value when there was a definite bronchitis.

Dr. Hughes had brought up the question of tuberculosis secondary, through glandular enlargement, to the acute infectious diseases. Dr. Plomley thought that there must be tuberculous contact to cause infection; there must be definite, immediate contact with a tuberculous patient. It had not been his experience that many cases of tuberculous disease were seen secondary to these acute infectious diseases. Non-tuberculous enlarged glands in the mediastinum were very common and caused persistence of cough. Dr. Plomley thought that treatment with iodides and tonics was of great value in such cases.

DR. J. J. WOODBURN congratulated the speakers on their excellent papers. He remarked on Dr. Hughes's reference to the fact that in the nephritic complications of scarlatina cervical adenitis was present, presumably following infection of the tonsils, and on Dr. Davy's reference to complications of middle ear disease, when he had said that tonsils and adenoids should be removed. Dr. Woodburn was disappointed that no mention had been made of the occurrence of scarlet fever and its complications after the tonsils had been removed. He would be interested to hear a report of cases of scarlatina when the tonsils had been removed. Dr. Woodburn then spoke of diphtheria and scarlet fever and the possible involvement of the tonsils and said that he would like to hear from Dr. Hughes and Dr. Davy whether there was any lessening of complications in subjects who had their tonsils removed. No doubt if there was enlargement of tonsils and adenoids in a child who was infected by these conditions, the child was more liable to complications.

DR. A. S. WALKER expressed his interest in the papers and also in the remarks of those who had already commented thereupon. Dr. Plomley had spoken of tuberculous infection of the mediastinal glands as a complication of measles. Dr. Walker could not but agree that contact was a necessity in the occurrence of tuberculosis after measles. If a child with pulmonary apparatus damaged as a result of measles lived in an actively tuberculized home, then there was the risk of having an actively tuberculized child.

Vaccines had been damned with faint praise by the readers of the papers. Dr. Walker had had no extended personal experience with vaccines, since of late he hardly ever used them. He thought that the question of vaccine therapy needed scientific investigation. The feeling now was that vaccines might do good and they might not. The views of clinicians and the views expressed in text books were the same in regard to this matter. Dr. Walker had heard eminent clinicians express the opinion that chronic bronchitis was one of the conditions most successfully treated by vaccine therapy, but this had not been his own experience.

Dr. Walker agreed with the readers of the papers as regards the importance of sinusitis. It was surprising that in text books the question of sinusitis was so neglected; bronchitis was often discussed without recognition of naso-pharyngeal infection. If a child had a pulmonary infection, Dr. Walker thought that no investigation of the condition was complete without an examination of the naso-pharynx and sinuses.

Dr. Woodburn had referred to the possible effects of tonsillectomy in these infections. When the tonsils were removed in a small child there might be some compensatory enlargement of tissue in the naso-pharynx; although it was not cryptic, it was possible for it to become chronically infected, just as the tissue usually spoken of as adenoids could become infected. He agreed that it would be interesting to find the incidence of scarlatina in such children. It was difficult to give a definite opinion on this subject at present.

Dr. Hughes had pointed out that nephritis was frequently preceded by cervical adenitis. Dr. Walker admitted that a rise in temperature was common before nephritis. He spoke of his experience with types of nephritis, lipoid nephrosis and hæmorrhagic nephritis, which frequently followed tonsillitis. Infected tonsils were not the only cause, but they might be associated with the condition. He quoted the case of a boy who had hæmorrhagic nephritis. One tonsil had been removed and the next day blood had been passed in the urine. Later the other tonsil had been removed and the next day blood had been passed in the urine again. Dr. Walker thus maintained that nephritis might be associated with naso-pharyngeal infection in these infectious diseases. Prophylaxis of the sequelæ and careful treatment of the predisposing conditions should be more important than treatment of the diseases themselves.

Other complications, such as laryngitis in measles, sometimes occurred. Dr. Walker had also seen arthritis in measles, of monarticular type; such a complication might cause confusion with acute rheumatism. The arthritis of scarlet fever seemed to be more closely akin to acute rheumatism. What was the cause of these complications? That was the most important phase of the present discussion. Dr. Walker spoke of the common incidence and importance of respiratory infections in these diseases. Measures should be taken to combat them from the point of view of general hygiene (for it was usually children in poor homes who had these diseases), prophylaxis, the recognition of early incidence of these infections and their adequate treatment.

DR. R. A. R. GREEN congratulated the speakers and said that he was interested that Dr. Hughes had brought up the question of chronic lung infection, especially in regard to bronchiectasis. He had seen a good deal of this condition following upon whooping cough. He stressed the difficulty in adequately dealing with a child after the acute infection had settled down. Despite care, these children were apt to suffer from recurrent bronchitis, really bronchiectasis. He believed that this latter condition in adults must have its origin in the bronchopneumonia complicating the acute infectious diseases of childhood. It was usually, in adults, a hopeless condition for cure. Dr. Green made a plea for some method of sanatorium treatment to be made available for these children. There was at present no place to send them to get out of the city atmosphere. There were, certainly, organizations that could take children for a limited period; but these children needed at least six months in the fresh air.

Dr. Walker had referred to the use of vaccines in chronic pulmonary infections. Dr. Green thought that

in using vaccines it was not so much the effect on the local disease as the building up of resistance to toxins absorbed from the local condition. This might be an explanation of the good that vaccines seemed to do in some cases. The health of the patient improved, though the local signs did not show much diminution.

Dr. Green was sorry that Dr. Hughes had not mentioned the amount of cardiac damage that resulted from the acute infectious diseases. All these children got a certain amount of slight myocardial inflammation. The heart muscle probably always underwent a certain cloudy swelling. If not handled properly, this might go on to the stage of fibrosis and permanent damage to the heart, which might be attacked later on by some other disease. They should watch for this after the child was freed from the infection.

In conclusion Dr. Green mentioned one case in which a child had been discharged from hospital in fairly good condition. It was not very active, however, and when taken to the mountains showed cardiac distress and became breathless on slight exertion. The child was much better in the city and the condition cleared up with rest and tonic.

DR. E. P. BLASHKI said that the papers had been most helpful and stressed the importance of bringing these problems before members and thrashing them out. Dr. Hughes had pointed out that the incidence of scarlet fever was not diminishing. One reason for this was that large numbers of children were discharged from hospital without tonsillectomy after scarlet fever. Dr. Blashki had carried out an investigation during three years at the Royal North Shore Hospital, in order to discover whether there were any children with scarlet fever who had no tonsils. He had not found one. He had come across a German article to the same effect. But during the next weeks he had found two children with their tonsils removed who had scarlet fever; there were, however, no complications. So that if the disease was not prevented, at least its severity was diminished. He was sure that at the Royal North Shore Hospital, where they had removed the tonsils of many children in the scarlet fever wards, there were fewer return cases from families. The care of the children sent out from the wards was the direction in which they must try to reduce the number of cases.

Very little had been said about diphtheria. It might be possible to get rid of the problem of carriers after diphtheria by the removal of tonsils. There were, however, some carriers who had no tonsils.

As to vaccines, Chevalier Jackson said that they should be prepared from smears obtained direct from the lungs by means of the bronchoscope. If made from sputum they would be unsatisfactory. Dr. Blashki had had only slight experience with this method, but he had noted that results when the material had been obtained direct from the bronchus were better than when the vaccine had been prepared from the sputum. He mentioned a case in which a pure culture of *Bacillus pyocaneus* had been obtained; vaccine therapy in this case had met with a wonderful result. He thought that as a rule vaccines were not used for a long enough time; they were used for only three or four weeks. Was it possible in a few weeks to rid the patient of an infection that had lasted many years?

DR. LINDSAY DEY thanked the readers of the papers for providing such excellent material for discussion. He had been interested in the way in which a crystallization of their thoughts on chronic bronchitis and sinus infection had been brought about in the last few years.

In the early days of X ray examinations of the chest, reports had often been returned with the statement: "Increased markings and hilar thickening suggestive of tuberculosis." Yet clinicians had felt that the patients were not tuberculous and the von Pirquet test had confirmed the belief. This condition was now described as fibrosis of the lung or chronic bronchitis. Dr. Dey had not seen many cases associated with tuberculosis. He spoke of a child admitted to hospital with an infection of the upper respiratory tract; it had had a mixed type of infection and had suffered from toxæmia; there had been signs in the upper lobe. X ray examination had revealed a definite cavity; but it was not recent. Was this a tuberculous condition or a chronic septic condition? There had been no tubercle bacilli in the sputum. The child had died and the pathologist's report stated that there was a definite tuberculous cavity. One point against the possibility that it had been due to sepsis was that it had occurred in the upper lobe. When they were fortunate enough to get a pure culture from the sputum, the results of vaccine therapy were good, provided it was continued over a long period.

DR. A. J. GIBSON expressed his appreciation of the papers which, he said, were most important and worthy of careful study. He was particularly interested in the later sequelæ. In the investigation of albuminuria of pregnancy he paid close attention to the past history of the patient, and particularly the illnesses of childhood. Patients who had had either scarlet fever or diphtheria, or a severe attack of measles with complications, with, in addition, recurring attacks of tonsillitis, almost without exception developed albuminuria during the latter months of pregnancy. Also, of patients with a history of chronic infection of the upper respiratory passages he could not recall one without albuminuria in pregnancy.

Dr. Gibson had been interested in Dr. Walker's comments on nephritis. He thought that it was not adequately recognized that these diseases and their complications very often damaged the kidneys and heart to a certain extent, which in ordinary times of health was not recognized as the patients were without symptoms. In such women, when the strain of pregnancy was superadded, the kidney function became impaired.

If medical practitioners were on the look-out for albuminuria in patients with this history, the condition would be recognized earlier. If such patients were treated carefully from the beginning, it should be possible to diminish the incidence of severe toxæmias and eclampsia. Maternal mortality would also diminish, because these toxæmic conditions were frequently associated with *antepartum* hæmorrhage, and in such patients sepsis was prone to supervene. These were the three main causes of death in pregnancy. If it was possible to control the complications of the acute infectious diseases, and if infected sinuses and tonsils were properly treated, then there would be a better chance of diminishing maternal mortality,

Dr. Gibson himself, when living in the city, had suffered at various times from sinus infections, but when he had moved out of town and surfed, the sinus troubles had disappeared. If children in the poorer districts could have a trip to the country to convalesce completely from the exanthemata, many of the sequelæ would be avoided.

Dr. Hughes, in reply, thanked those members who had taken part in the discussion. As to what Dr. Plomley had said in regard to vaccines, it was difficult to assess the value of vaccines, and the medical practitioner could be guided only by experience. Children who had a lot of bronchial discharge without actual lung damage were more likely to react to vaccines than those with lung damage and fibrosis.

Dr. Woodburn had referred to the incidence of these diseases in children who had had their tonsils and adenoids removed, and Dr. Hughes had been interested in Dr. Blashki's experience. At the same time, removal of tonsils was likely to be followed by some of these infections, notably by scarlet fever.

Dr. Walker had spoken of the risk of tuberculosis with these children. Dr. Hughes agreed that association with persons suffering from active tuberculosis was a most important factor.

In reply to Dr. Green, Dr. Hughes said that measles and whooping cough were the commonest infections followed by chronic lung infection. In regard to myocardial damage, there was an important point to consider. Until they understood the bacteriology of rheumatism they were not in a position to say that the cardiac disease was not associated with rheumatic infection.

In reply to Dr. Blashki, Dr. Hughes said that diphtheria was not within the scope of his paper. There was still much to be learnt about the carrier problem.

In regard to what Dr. Gibson had said about the occurrence of albuminuria in pregnant women who had had scarlet fever in their younger days, Dr. Hughes admitted that it was hard to believe that the damage to the kidneys caused by the exanthemata was only transient. It was a matter of being able to follow the patients in their after lives, and the consensus of opinion among those who had the opportunity of doing so, was that permanent renal damage was not common.

Dr. Hughes had been disappointed that no member of the Section of Preventive Medicine and Hygiene had taken part in the discussion. A big epidemic of measles could be a serious matter, and the question of hygienic measures was a most important one; that was why he had referred to notification of measles *et cetera*. The public still did not realize that measles was anything but a trifling childish ailment. This condition of affairs should be improved. It was also sometimes a problem to arrange for the admission of patients suffering from measles to hospital.

Dr. Davy, in reply, agreed with Dr. Walker that there was a surprising lack of reference to some of the sequelæ in text books. It was striking that the occurrence of chronic sinusitis was barely mentioned; it was merely included under the general heading of naso-pharyngeal infections. More emphasis should be laid on it. It was referred to in some papers on the subject, but not in all.

Dr. Davy agreed with Dr. Green as to the desirability of sanatorium treatment for children threatened with chronic respiratory sequelæ following the infectious fevers. It was a practical suggestion, because prophylaxis was the really important factor in the problem of chronic sinusitis.

As to the results of tonsillectomy in chronic naso-pharyngeal infection, Dr. Davy thought that, although it was not always satisfactory, it had come in for some unfair criticism, as frequently partial tonsillectomy was performed and the patient was then perhaps worse off than if there had been no operation.

In regard to diphtheria carriers, tonsillectomy was sometimes the only therapeutic measure which could cure patients of this condition. Nasal and aural discharges might contain virulent Klebs-Löffler bacilli after diphtheria; but sometimes non-pathogenic bacilli were present which so closely resembled diphtheria bacilli as to be practically indistinguishable from them without guinea-pig inoculation.

Medical Societies.

MELBOURNE PÆDIATRIC SOCIETY.

A MEETING OF THE MELBOURNE PÆDIATRIC SOCIETY was held at the Children's Hospital, Melbourne, on November 18, 1931. The meeting took the form of a series of clinical demonstrations.

Diverticulum of the Bladder.

DR. R. M. DOWNES showed a female patient, aged six years, who suffered from hæmaturia and frequency of micturition. At the age of seven months she had suffered an attack of pyelitis. Four months prior to her admission to hospital she had been subject to attacks of suprapubic pain. At the time of her admission there was pronounced bacilluria, and the urine was foul-smelling. The blood urea content was 31 milligrammes per hundred cubic centimetres. Cystoscopic examination was impracticable at first, owing to the smallness of the bladder and the presence of pus and blood. Later, hæmorrhagic nodules were observed in the region of the left ureteral opening, which was obscured. X ray examination by means of "Uroselectan" suggested hydroureter and hydronephrosis on the right side; the left kidney was not demonstrable. A pyelogram of the right kidney later revealed no abnormality. By rectal examination a mass could be felt in the left side of the bladder. A diagnosis of tumour of the bladder was made. At operation, performed on October 27, 1931, the mass was found to be a sac communicating with the left ureter and containing a quantity of foul-smelling fluid. The condition of the patient prevented a fuller investigation at the time. It was intended to operate again when the child's condition improved.

Diaphragmatic Hernia.

DR. H. D. STEPHENS showed a male child who had been operated on two years previously for the relief of attacks of abdominal pain; a normal appendix had been removed. The child's general health was good. For some months before his admission to hospital he had been subject to attacks of vomiting and constipation, but had been quite well in the intervals between attacks. Examination revealed that the heart was displaced to the right. The signs typical of pneumothorax were present on the left side. Borborygmi could be heard on the left side of the chest. X ray examination revealed the presence of bowel in the left side of the thorax. Operation was performed on November 5, 1931. There was a large opening in the postero-lateral part of the diaphragm. The spleen and portions of the large and small intestines were in the thoracic cavity. The viscera were returned to the abdomen after the foramen had been enlarged. A diagnosis of congenital diaphragmatic hernia was made.

Multiple Deformities.

Dr. Stephens also showed a male child, aged twenty months, who had been admitted to hospital on June 18, 1930, at the age of fourteen weeks. At that time he was suffering from severe conjunctivitis, and his eyelids were gummed together. In addition he was afflicted with numerous deformities. Double hare lip and cleft palate were present, and the mucous membrane so held the jaws that the mouth could be opened for eight millimetres (one-third of an inch) only. There was a cyst at the tip of the tongue (parrot tongue). Accessory nipples and an umbilical hernia were present. The testes were undescended and the scrotum was rudimentary. The fingers were webbed, and, in some instances, contracted in flexion; there was a rudimentary finger-nail on the medial side of either hand; no other nail was present. There was a fold of skin from thigh to leg on the posterior aspect, causing contracture at the knee on either side; the only toe present was the great toe on the left foot. Various plastic operations were performed. The child's progress was impeded by three attacks of nasal diphtheria and by multiple abscesses.

Fibrocystic Disease.

Dr. Stephens's next patient was a boy whose legs had been put in splints nineteen months before the meeting, in the treatment of *genu valgum*. When the splints were removed, six months later, an elongated swelling, 5·0 centimetres by 2·5 centimetres (two inches by one inch), was observed at the upper end of the right tibia. The soft tissues were thickened and tender, and the patient was unable to walk. Radiographic examination revealed a localized area of bone destruction. At operation a cystic condition of the diaphysis was found; the epiphyseal cartilage was not involved. The cavity was curetted. Three months before the meeting the region again became swollen, and curettage was repeated; at this time the walls of the area were found to be smooth and hard, and the contents soft cartilaginous tissue. Two applications of deep X ray therapy were given; since then the lesion had not progressed. X ray examination revealed increase in the bony sclerosis.

Splenomegaly.

DR. L. J. HOOD showed a female child, aged nine years, who had previously suffered at intervals from abdominal pains and "bilious attacks". On September 16, 1931, the leucocytes numbered 7,000 and the erythrocytes 5,200,000 per cubic millimetre. Lysis of the red blood cells commenced in a 0·625% solution of saline and was complete in a 0·45% solution. On November 10, 1931, the red blood cells numbered 4,000,000, and the white cells 10,000 per

cubic millimetre. Splenectomy was performed on November 12, 1931. This child's mother suffered periodically from jaundice, and her maternal grandfather had been similarly affected.

Dr. Hood also showed a female child, aged thirteen years and nine months, who had suffered from headache, dizziness and abdominal pain. At the time of admission on August 26, 1931, the temperature was raised above normal and the pulse rate was 120 per minute. The child was very pale, and there was slight icterus of the conjunctivæ. There was evidence of cardiac enlargement, and a systolic bruit could be heard over all cardiac orifices. The liver border was palpable two fingers' breadth below the costal margin; the spleen was palpable. The leucocytes numbered 5,000, and the erythrocytes 2,200,000 per cubic millimetre. The hæmoglobin value was forty *per centum*. Reticulocytes were in the proportion of 15%; a few metamyelocytes were observed in the blood film. Blood transfusion was performed on the following day. On September 17, 1931, the spleen was removed. Eight days after operation the erythrocytes numbered 3,432,000 and the leucocytes 11,000 per cubic millimetre. On October 2, 1931, the red blood cells had increased in number to 4,560,000 per cubic millimetre.

Malaria.

DR. J. W. GRIEVE showed two male children, one aged two years, one aged three years, who had suffered from malaria and had responded to treatment by means of quinine. One patient, suffering from benign tertian malaria, had required 0·3 gramme (five grains) of quinine sulphate three times a day; while receiving 0·1 gramme (two grains) three times a day, he continued to suffer from malarial paroxysms.

Epilepsy.

DR. H. BOYD GRAHAM showed a male patient, aged twelve years, who had suffered from convulsions in infancy and early childhood. These merged into definite epileptic seizures by the time the child was seven years old. In a characteristic attack a vacant stare appeared on the patient's face, his left arm flexed and his left leg extended; convulsive movements often followed. Sometimes he became cyanosed. These paroxysms were often preceded by acts of naughtiness, such as stealing and over-eating. He had no recollection afterwards of the occurrence of the paroxysms. Neurological and other physical examination failed to reveal evidence of any organic lesions. The Binet intelligence quotient worked out at 69, and Dr. Williams stated that the test reactions showed a definite lack of self-confidence and a need for encouragement and mixing with other boys. The child was dull and of weak character and easily led astray. The administration of "Luminal" in a dose of 0·03 gramme (half a grain) night and morning was commenced on July 18, 1931, and no fits occurred thereafter.

Dr. Graham remarked that the results of treatment were a triumph for "Luminal". The patient felt much better. Though he had been taking as many as five fits a day prior to the administration of "Luminal", he had taken none since. The patient had been instructed to guard against over-eating and constipation.

Dr. Graham's second patient was a male, aged nine years, who had had two epileptiform seizures before being brought for examination. The first seizure occurred in February, 1931, when he lost consciousness, the second in August, 1931, when he lay back in his chair for a few moments, but did not lose consciousness. He was a dull child, and received extra coaching at school to make up his backwardness. The Binet intelligence quotient was 88. There was no evidence of organic disease. From September 10, 1931, to November 7, 1931, he was given "Luminal" in a dose of 0·03 gramme (half a grain) night and morning. There were no more seizures. Dr. Graham suggested that the extra coaching of this boy had produced extra stress on a poor quality brain.

Dr. Graham also showed a girl, aged four years, who had suffered from epileptic seizures from September 5, 1930. The attacks continued in spite of treatment, save for a recent intermission when she was suffering from measles. In a characteristic seizure she threw herself back, turned her eyes up, closed her eyes, clenched her hands, stopped breathing, became cyanosed and frothed at the mouth. She usually regained consciousness after about three minutes, then slept for half an hour or a little longer. As many as a hundred seizures might occur in one week, and she had been seen at the hospital in a condition of *status epilepticus*. Investigation revealed that she was a person of variable moods. Sometimes she was sweet and docile, sometimes uncontrollable. The Binet intelligence quotient was 93 and the Porteus intelligence quotient was 80. She was given "Luminal" in a dose of 0·03 gramme (half a grain) twice a day. This appeared to be insufficient to check the paroxysms and the dose was doubled for a short time in October, 1930. During the following week she had only one seizure, but by the middle of November was having as many as twelve a week. She fell frequently and was becoming very excitable; "Luminal" was stopped, therefore, and potassium bromide in a dose of 0·45 gramme (seven and a half grains) was given three times a day. The tonsils were removed in December, 1930. "Luminal" was repeated and the attacks became very frequent. For the six months prior to the meeting "Luminal" in a dose of half a grain three times daily had been given. Recent improvement had occurred.

Dr. Graham also showed a male patient, aged thirteen years. There was no definite family history of epilepsy, although the father suffered from fainting turns. Epileptic seizures commenced when the child was eleven years old. When walking, he would stop suddenly, with a vacant stare on his face, and seemed almost unconscious for a few seconds. Similar seizures occurred at times when he was seated. If he had a succession of three or four such fits, he was likely to be seized with a more severe and prolonged one. The patient was an anxious, nervous, worried boy, whose physical and mental development was normal. The blood serum did not react to the Wassermann test. Neurological examination revealed no abnormality. The administration of "Luminal", assisted by potassium bromide at times, was followed by improvement. Dr. Graham remarked that there was probably a pronounced psychological factor; several features were suggestive of neuromimesis. The possibility of cerebral or cerebellar tumour could not be excluded. Opinions were invited concerning the diagnosis and treatment.

Finally, Dr. Graham showed a female patient, aged eight years, whose three brothers, aged thirteen, eleven and ten years respectively, were apt to bully her. Her mother's brother suffered from convulsions in childhood. The patient commenced at school at the age of five and a half years, and about one year later she was first seized with epileptic attacks. In a fit she became sleepy and lost her reason for a few minutes. Sometimes her mother shook her because she "stood like a statue". The fits occurred almost every day. She was a nervous, excitable child, with a good dramatic sense. Normal figures were obtained by the Binet and Porteus tests, but there were some few tests for all ages from the fourth to the fourteenth year in which the child failed. She used to write left-handed, but was now able to write with the right hand. She suffered from threadworms. No other organic lesion was discovered. The administration of "Luminal" was followed by an improvement, but she continued to take occasional fits until a tooth was extracted in June, 1931. After August 26, 1931, she had no attacks. Dr. Graham remarked that this was apparently a case of genuine *petit mal*, in which the presence of such an irritating factor as a carious tooth in a child of peculiar make-up had acted as the exciting cause. Possibly the threadworms and "blow hot, blow cold" home treatment had also been exciting causes. He invited further comment.

Cretinism.

DR. D. O. BROWN showed a female infant, aged eight months, who had been seen by him first on July 1, 1931, when she was four months old. Her weight at that time was eleven pounds four ounces. The child had been breast fed for three months, and then had been given condensed milk. The child did not thrive and did not

cry properly. There was no family history of goitre or cretinism. The child was pale; her skin was dry and wrinkled, and her hair sparse and coarse. Her lips and nose were thick; her fingers were stumpy, and her tongue was large and protruding. The child never smiled and had no interest in her surroundings. Her musculature was flabby, and her abdomen was protuberant.

Friedreich's Ataxia.

Dr. Brown also showed a male child, aged thirteen and a half years, who at birth weighed 2·3 kilograms (five and a quarter pounds). Labour had been slow, and delivery instrumental. The child's early development was said to be normal; he walked well at the age of four years. When he was six years old, he became ill and was apt to stumble. From that time onward his walking became worse. The boy's intelligence appeared to be above normal. The forehead was wrinkled; the bridge of the nose was flat; the speech was slurred. There was bilateral ptosis. The pupils reacted normally. There were slight strabismus and pronounced nystagmus. There was slight secondary optic atrophy. The deep reflexes were all absent; the superficial abdominal reflexes were active; the plantar reflexes were extensor in type. *Pes cavus* was present on either side. General sensation was normal, but the sense of position of the toe was poor. The gait was ataxic. Rombergism was present. Examination of the cerebrospinal fluid revealed no abnormality. The blood did not react to the Wassermann test.

Habit Sucking.

DR. KATE CAMPBELL showed a male patient, aged six years, whose birth had been normal at full time. He had been artificially fed on cow's milk. At the age of fifteen months he suffered from pertussis. He was always a healthy child, though he was easily excited. He was the third child of a family of five and showed some jealousy of his younger brother. There was nothing of importance in the family history. During the fifteen months before being brought to hospital the child developed the habit of sucking his food. Even though complaining of hunger before the meal, he would suck the first mouthful for half an hour. During the sucking he wore a dreamy expression and sat in an abstracted state. There was frequently some quivering of the lower lip, and on occasions his bowels and bladder acted involuntarily during the sucking. He lost weight as a result of the sucking and the consequent difficulty in taking sufficient solid food. He sometimes sucked his tongue. There was no history of any other bad habit, such as masturbation.

He was found to be a pale, ill-nourished child. Otherwise the general examination revealed no abnormality. He was treated for some weeks in the out-patient department (where he was also seen by the psychiatrist) with "Luminal". His parents were instructed to endeavour to find fresh interests for him. After three weeks there was no improvement. He was then transferred to the seaside convalescent home and no special treatment given, other than mixing with the other children. After seven weeks the sucking habit disappeared and his nutrition considerably improved.

Enuresis.

DR. L. CRAIG showed four patients who suffered from enuresis. Dr. Craig remarked that in these cases a careful general examination should be made, and that particular attention should be paid to the central nervous system, the throat and nose, the urine, the bowels and the blood. Any abnormality found should receive prompt treatment. If enuresis continued, ephedrine should be given. If this was not followed by immediate improvement, it should be stopped. "Luminal" should then be given. If improvement was still not great, a record should be kept of the temperature and the pulse and respiration rates, and the child should be kept under observation.

Secondary Anæmia and Diaphragmatic Hernia.

DR. MONA BLANCH showed a male child, aged four years, suffering from gross secondary anæmia, who, during a routine X ray examination, was found to have a right diaphragmatic hernia. The patient was born normally at full term, and was breast fed for eighteen months. He had five sisters and two brothers alive and well. He was healthy until December, 1929, when he lost his appetite and became pale; a fortnight later he developed a cough, and after another fortnight was admitted to hospital, on January 23, 1930.

At the time of admission the child was very pale. There was gross respiratory distress, preventing recumbency. The temperature was of a swinging type. The heart was enlarged, and there was an apical systolic murmur. There was patchy pneumonic consolidation at the base of each lung. The liver dulness extended for three fingers' breadth below the costal margin. The spleen was not palpable. There was no obvious glandular enlargement. There was no reaction to the Wassermann test. X ray examination revealed cardiac enlargement and pneumonic consolidation at the base of the right lung. The diaphragm was elevated on the left side. There was an extremely faint indirect reaction only to the Van den Bergh test. The red blood cells numbered 3,080,000 and the white cells 14,000 per cubic millimetre. There were 74% of polymorphonuclear cells, 8% large lymphocytes, 14% small lymphocytes, 2% mononuclear cells, and 2% myeloblasts. Some normoblasts were present and there was evidence of poikilocytosis. No abnormality was detected in the urine.

The chest cleared up and the temperature subsided, though there was an exacerbation in the third week. The bowels needed fairly frequent purgation. The pulse rate varied from 72 to 140 per minute. The pallor and enlarged liver remained unaltered. The patient was discharged on February 25, 1930, when he was taking "Karna Vita" in a dose of one dessertspoonful twice a day.

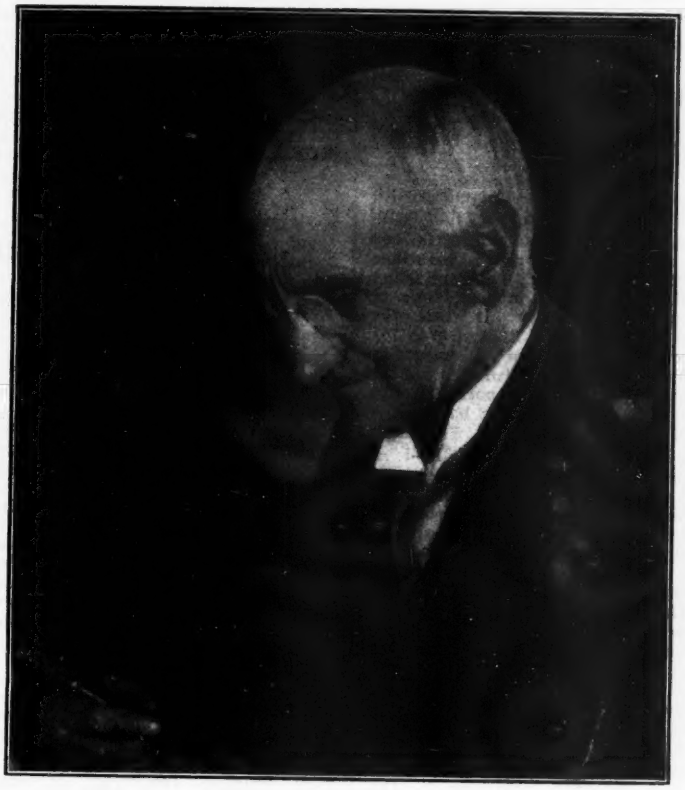
During a year, from May, 1930, to May, 1931, he took some liver or hog's stomach preparation or iron and quinine citrate for months at a time. Twice he omitted everything for several weeks, and each time was brought back with gross pallor, anorexia and exhaustion. In May, 1931, despite adequate doses of "Porculin" for a month, his blood contained only 2,520,000 red blood cells per cubic millimetre, and his hæmoglobin value was only 40%. At this stage *ferri carbonas saccharatus*, in a dose of 0·6 gramme (ten grains) three times a day, was given in addition to the "Porculin", with immediate dramatic improvement. After two months of this treatment he was regarded as cured by his family, who did not bring him to hospital for another three months. Again he relapsed, and again he improved rapidly with "Porculin" and iron. On November 13 examination revealed that his colour was fairly good, the apex beat was in the fourth intercostal space, 1·8 centimetres (three-quarters of an inch) medial to the nipple line. The area of liver dulness was the same as before. The red blood cells numbered 3,810,000 and the white cells 7,400 per cubic millimetre; the hæmoglobin value was 55%; there were decided anisocytosis and poikilocytosis and a fair proportion of macrocytic forms. No nucleated red cells were seen, and occasional cells only were affected with punctate basophilia.

X ray examination by Dr. Colin Macdonald revealed depression of the right diaphragmatic dome, with impaired excursion and a loss of the normal translucency over the medial half of the right base. The line of the diaphragmatic dome was unbroken, and its movement was not paradoxical. The loss of translucency was caused by a large air-containing shadow with a well defined semicircular outline projecting beyond the right border of the cardiovascular shadow. The shadow was of a roughly spherical object situated posteriorly. No fluid level was seen within this shadow. The mediastinal contents were not displaced, and the remainder of the thorax was apparently normal. The outer border of the shadow corresponded to the curved line described in 1910 by Dietlin and Knierim as characteristic of right-sided daphragmatic hernia.

When a barium meal was administered, the œsophagus was found to be normal, except at its lowest point. The meal ran down the œsophagus into a large thoracic sac

lying posteriorly and medially. When the child was placed in the erect posture the meal emptied from the upper into a lower sac corresponding to the cardiac end of the stomach situated normally. That the upper sac consisted of stomach and not œsophagus was shown by the fact that the gastric rugæ could be seen running from the upper to the lower sac. The loculi were connected by a small constriction corresponding in position to the œsophageal opening. The abdominal portion of the stomach was drawn upwards and to the left. Dr. Macdonald remarked that the X ray findings suggested a herniation of a large portion of the stomach through the œsophageal opening into the right hemithorax. No other portion of the gut was included in the hernia.

DR. ROBERT SOUTHBY said he was particularly interested in the case because it resembled so closely one he had reported in THE MEDICAL JOURNAL OF AUSTRALIA (February 23, 1924). Both children had been males of approximately the same age, the last of large families. In each there had been a severe grade of secondary anæmia, which had responded to iron therapy, and in each there had been a right-sided diaphragmatic hernia containing a large portion of the stomach. In Dr. Southby's case death had occurred from *otitis media* and bronchopneumonia. At *post mortem* examination it had been found that the diaphragm, in the region of the *vena cava*, was dilated into a large pouch projecting into the posterior mediastinal space and containing almost the entire stomach and portion of the duodenum. The stomach could be returned to the abdominal cavity through a well defined ring without difficulty.



Obituary.

RICHARD ARTHUR.

BY the passing of Richard Arthur the State loses an old and faithful servant, and the medical profession a member whose life and work had brought it much credit.

Richard Arthur was born in 1865, at Aldershot, England. His father was David Arthur, a Presbyterian chaplain to the military forces. He was educated at George Watson's College, Edinburgh, and at Dover College; he then proceeded to Saint Andrews University, where he took the degree of Master of Arts. He entered upon his medical studies at Edinburgh University in 1884 and was granted the degrees of Bachelor of Medicine and Master of Surgery, in 1888. In 1891 he obtained the doctorate of medicine of Edinburgh University for a thesis entitled: "Hypnotism and its Therapeutic Uses."

After his graduation Arthur intended to enter the army medical service, but was forced to abandon the idea when he was stricken with cholera contracted from a patient in the slums of Edinburgh. He visited Australia in 1890 for the sake of his health. Here he married Miss Jessie Sinclair Bruce, a daughter of the Reverend David Bruce.

Returning to England in 1890, he became engaged in work entailing great self-sacrifice, with the Methodist Medical Mission in the East End of London. In the following year, however, he contracted influenza, which had such a deleterious effect on his health that he determined to proceed to Australia to live permanently.

In 1891, then, he commenced practice in Mosman, the first medical practitioner to become established there. In these early years he was keenly interested in hypnotism, and employed hypnotic treatment in his practice. In the course of time he relinquished his general practice in Mosman and carried on a special practice in diseases of the eye, ear, nose and throat, in Macquarie Street, Sydney. At the time of his death he held the posts of Honorary Consulting Aural Surgeon at Sydney Hospital, and Honorary Consulting Surgeon for Diseases of the Ear, Nose and Throat at the Royal North Shore Hospital, Sydney.

He was first elected a member of the Legislative Assembly of New South Wales in 1904. He remained a member of the State Parliament until his death. He was Minister for Health in the Bavin Government from 1928 to 1930. Among the offices held by him during his many years of public life may be mentioned membership of the Boards of Directors of Sydney Hospital and the Royal Prince Alfred Hospital, and the Hospitals Advisory Committee (1917 to 1927).

Throughout his career he had as his objective the promotion of the health of the community, and his best endeavours were directed towards whatever works he felt would assist in the development of a healthy race of people. He was interested in the prevention of venereal disease, and was Chairman of the Select Committee on Venereal Diseases in 1915 and voluntary lecturer on venereal diseases in the military camps of New South Wales and Queensland in 1916. Later he was an honorary commissioner on venereal diseases and assisted in drawing up the *Venereal Diseases Act*. He was largely concerned in the establishment of the Picton Lakes settlement for consumptives, and it was to a large extent due to his efforts that homes for the prevention of tuberculosis of children were opened in the State of New South Wales. Among many important institutions which he established or helped to establish may be mentioned the following: The Immigration League of Australia, the Voluntary Workers' Association, the Country Women's Association, the Sunshine Club, the Health Exhibition in the Sydney Town Hall, and Milk Week.

From Dr. Gordon MacLeod, who was a fellow student of Arthur, we learn that at Saint Andrews University he was popular with his contemporaries, was a keen

athlete, and was prominent in sport and in the various students' societies. He was also an enthusiastic member of the University volunteer artillery corps. When he was a medical student at Edinburgh the greater part of his spare time was spent among the poor of the slums. At such an early stage in his career were manifest those attributes of altruism, self-sacrifice, and devotion to what he conceived to be his duty, that marked his professional and public life. Arthur's good works cannot be tabulated. Much that he did, not only for individuals, but for the community at large, has never been made public and will never be generally known.

It was characteristic of the man that in his last days, knowing that he was about to die, he should pay a last visit to the city to bid good-bye to his medical advisers and to thank them for their attention.

He is survived by his widow, a son and two daughters.

Public Health.

CANCER AND THE PUBLIC.

THE Director-General of Health of the Commonwealth has forwarded the following memorandum for publication.

The situation in respect of cancer mortality is one that demands the most earnest attention of the whole profession. Notwithstanding all the efforts that are being made, the cancer mortality shows no present sign of diminishing; it is, in fact, increasing. In 1921 the mortality rate was 87 per 100,000, and in 1931 it was 101 per 100,000. This presents a serious rise in the range of mortality from this disease and the profession must note the very arresting fact that the cancer mortality rate per 100,000 for the whole Commonwealth for both sexes combined rose from 95 in 1930 to 101 in 1931.

At the Third Australian Cancer Conference held at Canberra in March of this year, the delegates, without knowledge of the 1931 mortality rate, considered the situation sufficiently serious to pass a special resolution calling upon the Commonwealth Department of Health to undertake an educational campaign for the purpose of bringing to the public a realization of the actual cancer position and of the urgent importance of securing early advice and treatment. This campaign is to be launched immediately, and as every message which is sent out through any channel at all ends with the same note—"to consult your local medical practitioner"—it will be obvious how imperatively urgent it is that each section of the medical profession should take its place in a concerted effort with the obvious and single purpose of reducing cancer mortality.

The organization which has been brought into existence in each State has now made adequate provision for the treatment of every cancer sufferer who can travel or be transported to existing centres, by each of the most modern accepted methods. In this respect there is no lack of the necessary means.

In Australia, further, we can congratulate ourselves upon a medical profession of exceptionally high professional ability and sense of responsibility. For the profession generally the challenge to action will be in itself sufficient stimulus, and the increase in the numbers of persons seeking advice will not find its members lacking in any important respect. The Department looks to the profession, however, to take perhaps a little more care than usual in insuring accurate diagnosis, in taking every step possible to secure full and appropriate treatment, and in dealing tactfully and patiently with all those human aspects which are met in exaggerated form in every case of cancer or suspected cancer. There is here a very exceptional opportunity for gradual and tactful education of all sections of the community in the early signs of incipient cancer, and there is a special responsibility upon the profession to utilize it.

The treatment of many patients can be quite efficiently carried out by the local practitioner who is first consulted; but there are many other cases which should from the outset receive some form of treatment which is beyond the resources of that practitioner.

It is important that every medical man should take steps to ascertain the nearest reliable centre for diagnosis and for treatment, should place himself in touch with the cancer organization in the State to which he belongs, so as to secure the benefit of the undoubted advantages which these organizations offer to the individual practitioner and to secure for those patients who need it that ready access to adequate treatment which is thereby afforded. It is perhaps unnecessary to emphasize, but still it should be emphasized, that no practitioner in attendance on any patient should delay at any stage for one day longer than is necessary to insure accurate diagnosis and to commence appropriate treatment. Reluctance to part with a patient is met with sometimes, but the temptation to this course, either to satisfy a scientific conscience or for other less worthy reasons, should be put aside.

Nothing more need be said to the profession in Australia. The whole history of that profession is sufficient guarantee that whatever demands the situation makes, or may in the future make, will be fully met, and the interests of the patient will always be the first consideration.

Correspondence.

"AVERTIN."

SIR: I am glad to be able to add a little support to the contentions of your recent correspondents in favour of "Avertin".

After reading the article by Dr. Ellen Balaam which appeared in your journal last year, I determined to try the anæsthesia at Fremantle Hospital, where I was resident medical officer. For the first eight or nine cases very little success was attained, for what was afterwards discovered to be a very obvious reason; but thence I administered it in over 150 cases and have personal knowledge of its administration and effects in over 100 others, given by my colleague, Dr. Bossence. On no occasion in this series was there the slightest untoward happening, nor was any adverse criticism of its use successfully maintained. Indeed, those of the profession associated with us at operations where "Avertin" was used, who were at first sceptical and perhaps hostile, remained to praise the anæsthetic and request from the resident medical officer the employment of the "new" narcosis for their cases.

The patients to whom it was given were suffering from practically every respective ailment that one meets in hospital practice (omitting, of course, those in which "Avertin" is contraindicated). On one occasion I gave six minims to a baby, aged thirty-six hours, who submitted to an hour's operation for intestinal obstruction due to congenital absence of part of the ileum. The anæsthesia was ideal. Generally speaking, the more sick was the patient, the higher flew the colours of "Avertin". Compared with other anæsthetics, it gave far less upset to the subjects, far greater facility of manipulation to the surgeon, and a minimum of effort and worry to the anæsthetist.

In the first few cases I mentioned, very varying results were obtained. Narcosis took anything from a quarter to half an hour to establish, often with some excitement, simulating that associated with the euphoria of alcoholic indulgence. In two instances the patients would not go to sleep at all. This difficulty was found to be due to the "Avertin" fluid being insufficiently dissolved in the distilled water and magnesium sulphate solution. I was endeavouring to obtain solution in a glass beaker, with the aid of a stirring rod, and was quickly satisfied that it was usually impossible to do so. When I proceeded to employ a Florence flask fitted with cork, to shake the mixture for from three to five minutes, there was no further trouble.

I am now wholly enthusiastic about "Avertin", and if it became necessary for me to have an anæsthetic, and I could have my choice, I shouldn't take long to choose.

Yours, etc.,

LESLIE E. CLAY.

Victoria Park,
Western Australia,
June 23, 1932.

"TI-TROL."

SIR: As the essential oil of tea-tree (for example, "Ti-Trol") is more expensive than eucalyptus oil, can anyone inform me of any superiority of the former over the latter?

Yours, etc.,

J. S. BARR-DAVID.

Cleveland,
Queensland,
June 29, 1932.

"NEOTROPIN."

SIR: A mother to whom I was temporarily administering "Neotropin" for a chronic pyelitis, had an infant, aged four months, on the breast. The milk became coloured orange-yellow, and the infant passed urine of similar shade. This suggests an additional means of treatment of infection of the urinary system in infants on the breast.

Another female, who had a tendency to dyspepsia, developed cystitis and took two "Neotropin" tablets three times on one day only. Severe diarrhœa resulted. I would therefore recommend that the commencing dose of "Neotropin" should not exceed one tablet.

Yours, etc.,

J. S. BARR-DAVID.

Cleveland,
Queensland,
June 29, 1932.

OBSTETRICAL RADIOGRAPHY.

SIR: In our journal of October 7, 1922, page 421, under "Current Comment", the following appeared:

> The trained and skilled obstetrician may possibly be quite content to rely on his findings by palpation, on the use of the stethoscope and perhaps on careful vaginal or rectal examination. That occasions will arise when these will fail him is inevitable. As an adjunct to the pre-natal clinic the X ray department is indispensable.

Après la guerre fini.

Yours, etc.,

A. T. NISBET.

139, Macquarie Street,
Sydney,
July 1, 1932.

DIATHERMY OF TONSILS.

SIR: I apologize for intruding upon your space again. Dr. Graham Brown sets out to condemn a method; he succeeds only in condemning some operators. Surely nothing more than inspection was necessary to prove that large masses of tonsil tissue contain pus. As to the claims he states as being made by many users of diathermy (unless he discriminates, we are all included):

1. Tonsils can be removed in three to five sittings. No sane persons would assert it or attempt it; quite possible, but very dangerous and painful.

2. Treatment is painless. He admits this himself in his conclusions.

3. That remnants are sterile. They certainly may be for six years in my experience after a well conducted operation.

4. Remains are only granular tissue. It is hard to see how electrical coagulation could produce granulations.

5. No bottling up of crypts. I again assert it is a physical impossibility to cause cicatrization of the outer part of a crypt, even if it did not contain discharge. You cannot bring about such a state, even in the skin. In legend number 1 Dr. Duhig mentions expressing pus from a "bottled-up" crypt.

6. It is true that many surgeons in America are using diathermy, and his quotation below proves it, from *The Laryngoscope*: "It is undoubtedly gaining popularity in the hands of the general practitioner, the surgeon and the border-line specialist . . . the feeling prevalent today among the recognized specialists is that electrical coagulation is merely another valuable adjunct".

Dr. Bordier, of Lyons, has been using electrical coagulation for twenty-two years.

In his conclusion he admits he is satisfied that total removal by electrical coagulation is possible and can be almost painless.

I could quote seven hundred times seven cases of badly performed tonsillectomies, many of them my own before I adopted dissection as a routine for all cases. The chief difficulty about procuring a good result is the fact that many surgeons do not appreciate the depth of penetration by a crypt. The needle must be long enough to reach near the capsule. No method can be brought forward to make a good result easy, but I reiterate that with electrical coagulation an unskilled operator will do less harm than with any other method.

Yours, etc.,

W. KENT HUGHES.

22, Collins Street,
Melbourne,
July 2, 1932.

Proceedings of the Australian Medical Boards.

TASMANIA.

THE undermentioned have been registered, pursuant to the provisions of the *Medical Act*, 1918, of Tasmania, as duly qualified medical practitioners:

Seppelt, Norbert Erno, L.R.C.P., L.R.C.S. (Edinburgh), L.F.P.S. (Glasgow), 1912, Hobart Public Hospital, Tasmania.

Stonham, Franklyn Victor, M.B., B.S., 1929 (Univ. Melbourne), 24, Collins Street, Melbourne.

McMahon, James Edward, M.B., B.S., 1925 (Univ. Melbourne), Strahan, Tasmania.

Lumley, George Frederick, M.B., Ch.M., 1926 (Univ. Sydney), Mental Diseases Hospital, New Norfolk, Tasmania.

McDonald, John, M.B., B.S., 1917 (Univ. Melbourne), Launceston, Tasmania.

Stonham, John Geoffrey, M.B., B.S., 1928 (Univ. Melbourne), Launceston, Tasmania.

Lawrence, Robert Wreyford, M.B., B.S., 1916 (Univ. Melbourne), Franklin, Tasmania.

NEW SOUTH WALES.

THE undermentioned have been registered, pursuant to the provisions of the *Medical Act*, 1912 *and* 1915, of New South Wales, as duly qualified medical practitioners:

Beattie, Herbert Ronald Herschel, M.B., B.S., 1932 (Univ. Sydney), 20, Loyalist Road, Cremorne.

Holland, Esme Hope, M.B., B.S., 1932 (Univ. Sydney), 149, Arthur Street, North Sydney.

Hulme, John Gwydir, M.B., B.S., 1932 (Univ. Sydney), 28, Rosedale Road, Gordon.

Leake, David Norrie Fleming, M.B., B.S., 1932 (Univ. Sydney), Saint Vincent's Hospital, Darlinghurst.

McLaren, Alexander Wright, M.B., 1932 (Univ. Sydney), Saint Vincent's Hospital, Darlinghurst.

Palmer, Edward Charles, M.B., B.S., 1932 (Univ. Sydney), Saint Vincent's Hospital, Darlinghurst.

Putland, Vincent Malcolm, M.B., 1932 (Univ. Sydney), 63, Sloane Street, Haberfield.

Shaw, Francis William Rutherford Seymour, M.B., 1932 (Univ. Sydney), 7, Centennial Avenue, Haberfield.

Wheatley, Arthur, M.B., 1932 (Univ. Sydney), 71, Kensington Road, Kensington.

Young, John Horton, M.B., B.S., 1932 (Univ. Sydney), Newcastle Hospital, Newcastle.

Mitchell, Douglas Harold, M.B., B.S., 1926 (Univ. Melbourne), F.R.C.S., 1931 (England).

Restoration to Register:

Greenwood, Cecil Danforth, L.S.A., 1883 (London), M.R.C.S., 1883 (England), Saratoga, *via* Woy Woy.

Additional registration:

Coghlan, Cecil Charles, F.R.C.P., 1931 (Ireland).

Books Received.

FRAUD IN MEDICO-LEGAL PRACTICE, by Sir John Collie, C.M.G., M.D.; 1932. London: Edward Arnold and Company. Demy 8vo., pp. 286, with illustrations. Price: 10s. 6d. net.

PHYSIOLOGY OF BACTERIA, by O. Rahn; 1932. Philadelphia: P. Blakiston's Son and Company. Demy 8vo., pp. 452, with 42 illustrations.

MENTAL DEFICIENCY PRACTICE: THE PROCEDURE FOR THE ASCERTAINMENT AND DISPOSAL OF THE MENTALLY DEFECTIVE, by F. C. Shrubsall, M.A., M.D., F.R.C.P., D.P.H., and A. C. Williams, M.R.C.S., L.R.C.P., D.P.H.; 1932. London: University of London Press, Limited. Demy 8vo., pp. 358. Price: 12s. 6d. net.

PATHOLOGY FOR NURSES, by E. C. Piette, M.D.; 1932. Philadelphia: F. A. Davis Company. Demy 8vo., pp. 251, with illustrations. Price: $1.75 net.

MODERN GENERAL ANÆSTHESIA: A PRACTICAL HANDBOOK, by J. G. Poe, M.D.; Second Edition; 1932. Philadelphia: F. A. Davis Company. Demy 8vo., pp. 231, with illustrations. Price: $2.50 net.

Medical Appointments.

Dr. F. J. Ryan has been appointed Junior Resident Medical Officer at the Parkside Mental Hospital, under the provisions of the *Public Service Acts*, 1916 and 1925, South Australia.

* * *

Dr. J. L. Jona (B.M.A.) has been appointed Certifying Medical Referee at Melbourne, Victoria, pursuant to the provisions of the *Workers' Compensation Act*, 1928.

* * *

Dr. W. A. J. Brady (B.M.A.) has been appointed Acting Medical Superintendent of the Hospital for the Insane at Ararat, Victoria, pursuant to the provisions of the *Lunacy Act*, 1928.

Medical Appointments Vacant, etc.

For announcements of medical appointments vacant, assistants, *locum tenentes*, sought, etc., see "Advertiser," page xiv.

LAUNCESTON PUBLIC HOSPITAL, TASMANIA: Resident Medical Officer (male).

VICTORIAN VOCATIONAL AND CHILD GUIDANCE CENTRE, VICTORIA: Part-time Psychiatrist.

Medical Appointments: Important Notice.

MEDICAL practitioners are requested not to apply for any appointment referred to in the following table, without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

BRANCH.	APPOINTMENTS.
NEW SOUTH WALES: Honorary Secretary, 135, Macquarie Street, Sydney.	Australian Natives' Association. Ashfield and District United Friendly Societies' Dispensary. Balmain United Friendly Societies' Dispensary. Friendly Society Lodges at Casino. Leichhardt and Petersham United Friendly Societies' Dispensary. Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney. North Sydney Friendly Societies' Dispensary Limited. People's Prudential Assurance Company Limited. Phœnix Mutual Provident Society.
VICTORIAN: Honorary Secretary, Medical Society Hall, East Melbourne.	All Institutes or Medical Dispensaries. Australian Prudential Association, Proprietary, Limited. Mutual National Provident Club. National Provident Association. Hospital or other appointments outside Victoria.
QUEENSLAND: Honorary Secretary, B.M.A. Building, Adelaide Street, Brisbane.	Brisbane Associated Friendly Societies' Medical Institute. Mount Isa Mines. Toowoomba Associated Friendly Societies' Medical Institute. Chillagoe Hospital. Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY HOSPITAL are advised, in their own interests, to submit a copy of their agreement to the Council before signing.
SOUTH AUSTRALIAN: Secretary, 207, North Terrace, Adelaide.	All Lodge Appointments in South Australia. All Contract Practice Appointments in South Australia.
WESTERN AUSTRALIAN: Honorary Secretary, 65, Saint George's Terrace, Perth.	All Contract Practice Appointments in Western Australia.
NEW ZEALAND (Wellington Division): Honorary Secretary, Wellington.	Friendly Society Lodges, Wellington, New Zealand.

Editorial Notices.

MANUSCRIPTS forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary be stated.

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